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I.

LOWELL AS AN EDUCATOR.

The English-speaking world has been prompt to recognize that in the passing away of James Russell Lowell a great man has entered upon his immortality. The man of action, as well as the man of letters, has received generous recognition. Lowell is recognized to have added new luster to American citizenship, not simply because he had great talents but because he used them greatly. Whenever he spoke and whenever he wrote, whether in his captivating prose or his stirring verse, the charm and the power were but the man giving expression to himself. Not his thought merely, but his personality, informs his writings to a singular degree. So one who did not know Lowell might picture him to himself from his published works. He was found in actual intercourse to be the genial gentleman, the warm friend, the ready wit, the polished scholar, the earnest patriot, the great-souled man, that one might easily infer him to have been from what he wrote. Thus what he wrote was powerful because it was genuine. The life illustrated what the voice uttered. With all his gifts he won the ear, but he reached the heart by opening his own.

James Russell Lowell was graduated from Harvard College in 1838. He was appointed Smith Professor of the French and Spanish Languages and Literatures and Professor of Belles-lettres at Harvard in 1855, becoming Smith Professor Emeritus in 1886. It is not the purpose of this paper to dwell upon Lowell's career as an instructor. It is rather the aim to speak of him as an educator of the people, for his

audience circled the globe, and was coextensive with the English speech. Nevertheless it is pertinent to point out that this man who moved nations by his writings, counted it an honor to be a professor at a university. Fortunate indeed were they who wandered through the fields of literature hand in hand with him! But the college doubtless did for Lowell, when a student, what it will do for all who have the ears to hear and the eyes to see. The college made him—to apply to himself the words he used to describe in general its function—"a man of culture, a man of intellectual resource, a man of public spirit, a man of refinement, with that good taste which is the conscience of the mind, and that conscience which is the good taste of the soul." Gladly and royally he repaid his Alma Mater in the rich years of his maturity. The influence exerted by the continued connection of such a man with a university cannot be overstated. He lures within its influence those whom he captivates. He is in his own person the demonstration that study which may produce such splendid fruits is worth while. The university atmosphere is more inspiring because of his presence. But those whom he reaches directly from the professor's chair are but a handful compared with the multitudes who are influenced by the fact of his being there. Men learn to value that which they see to be valued by those whom they honor. Men may question as they will, whether a college education unfits a man for this or that. They will not doubt that it has rich power to reward, so long as men like Lowell count it an honor to be identified with college or university.

Attention has been called of late to the singular fact that with few exceptions the noted writers of the present generation in this country are men who have not been to college. This is in marked contrast to that which was true of Lowell's generation. The historians of note are still college-bred men, for historians must be students, and students are still trained in colleges and universities. But perhaps the majority of names that would come to one's lips to-day as he should call the roll of those whom he would think of in this country as literary men,

would be men without the college degree. It behooves the colleges to ask themselves searchingly why this should be so. I may not pretend to speak with authority upon the matter, but two thoughts occur to me as possibly helping to account for the circumstance. A large proportion of the flower of the college-bred men who to-day would be in the prime of their powers, went to the war. Many perished, and others in great numbers had their attention permanently turned from the reposeful to the active side of life. In the years immediately succeeding the war many could not go to college, who in happier times would naturally be there, and these found in the stirring scenes with which they had become familiar the awakening of the spirit which has budded into flower and fruit in its season. But another cause, I think, is to be traced to the colleges themselves. The last twenty-five years have been marked by a great development of the scientific spirit. This is shown in the colleges not only in the greater importance given to scientific studies, but in the introduction into all studies of the scientific method. This has lent attraction to the already fascinating study of philology, and in all language courses has tended to develop the scholar rather than the literary man. Of course the two characters are not essentially hostile to each other. Lowell himself conspicuously was both. But there is such a thing, I conceive, as the loss of the literary sense in the scientific study, and the only way to preserve both is to emphasize both. My own observation is not extensive enough perhaps to justify an opinion, but I have an impression that in the colleges the last quarter of a century has been more friendly to the philologist than to the man of literary tastes and faculties whose parts did not lend themselves kindly to scientific methods. Doubtless the literary critic must always be a philologist as well as a man keenly sensible of literary beauties. But it is not clear that this is true of the producer, particularly in the domain of the imagination. The great service which a man like Lowell could render to the average student who came within his reach was to make him fond of reading, to cultivate within him a taste

for good reading which might last as long as he should live. Such a service is not to be rendered, except to the very few, along the lines of philology, invaluable as that science is, but it must come as the answer of heart to heart, while the master interprets to the student the thought and the power and the inspiration dwelling immortal in the leaves he turns.

Lowell's power to stir men by his writings is admitted. His virility appeals to young and old alike. In his poem called "Columbus," he puts into the mouth of the great discover, on the fateful day that was to determine whether or not his voyage should issue in disappointment, these striking words:

> For I believed the poets; it is they
> Who utter wisdom from the central deep,
> And, listening to the inner flow of things,
> Speak to the age out of eternity.

With this conception of the poet's function it is easy to see how he fulfilled it. Out of the momentary situation which drew forth "The Present Crisis," he developed in thrilling verse the message which is eternally true, that wrong decisions when the choice is between good and evil are full of misery, that no slavery is more harmful than the slavery of the present to the past. Instruction, inspiration, the present may properly look for in the past; but to be bound by the past, so that the present is not free to act according to its own lights, that is intolerable. Progress, not stagnation, is the law of life. For Harvard's Commemoration of her patriot dead, at the close of the war, he sang the country's song of praise and thanksgiving for her great deliverance. No American can read it and be unmoved. Forever it will have power to inspire to a loftier patriotism. Because he was in very truth a poet he could do these things. Whatever else he was, he had that nameless gift which makes a few men seers. He "spoke to the age out of eternity."

In his essay on Dryden, Lowell says: "Without earnest convictions, no great or sound literature is conceivable." Throughout his own writings the evidence of "earnest convictions" lies upon the surface, but it is clear that they are

wrought into the very fiber. Even when he speaks truth with a jest as Hosea Biglow, you perceive that the humorist is an earnest man. He illuminates almost every theme with a touch of humor, but the humor is subservient to a serious purpose. He is never flippant though often gay.

In politics he was a true man to the last. No one smote the demon of slavery lustier blows than he. Always clear in his views of public duty he never feared to express them. It is said that when he was recalled from England by President Cleveland, he visited the White House, saying to the President, that he had called to pay his respects, like St. Denis, "with his head under his arm." So gracefully he accepted the chances of politics, illustrating again the virtues of that democracy of which he so often and so fondly wrote. Toward the close of his life International Copyright and Civil Service Reform commanded his heartiest services, as had the cause of human freedom in his earlier days. Eminent in letters, distinguished in public service, ringing true to every blow that tried his manhood's metal in a life of more than threescore years and ten, Lowell was an educator of the highest order. To quote a phrase from one of the utterances of the Rev. Dr. Richard S. Storrs, "Better than new Californias every year are such examples as these to a nation that would be noble."

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II.

THE ACTION OF THE COLLEGES UPON THE SCHOOLS.

It is said that we pass among foreign nations for a very self-complacent people, and perhaps our complacency is in nothing more conspicuous than in what concerns education. For what we have done in elementary education for the free instruction of all classes, we have reason for pride and self-gratulation; but it is always safer and more fruitful to fix our attention upon what remains unaccomplished than to hug ourselves for what we have achieved. Europe long ago solved some educational problems which we are only beginning to feel the need of studying, but which we can already see will soon press urgently for solution, if we would allay well-grounded discontent and turn to account a prodigious waste of power.

Of these problems the most manifest and the first in importance is the coördination of education. Whatever criticisms we may make upon the substance, the aims, or the principles of education in European states, we must admit that abroad education is organized and that here it is not. There, even in the poorest states, like Greece, all grades of schools, from the university to the kindergarten, are brought into organic union; here is an almost utter want of organization, a chaos of relations. To see and acknowledge our defects is the first condition of improvement, but we recognize that Europe has had an immense advantage over us in three things: in an established social order, in concentrated civil authority, and in having educational development directed by able minds. Speaking generally, our educational system, or more properly, lack of system, expresses in some measure the guesses and convictions of a great number of minds, some very able, and some not able at all. But we must add, what is of great

moment, that abroad education has been developed from the top, not, as with us, from the bottom. Europe had universities before it had secular schools. The youngest of the German universities is more than seventy years old, and the oldest will soon celebrate its six hundred and fiftieth anniversary. But the German school system, as we know it, is not quite a hundred years old, and that of France, which has had a university since the tenth century, scarcely counts a generation, though its beginnings mount up to the early years of this century.

Our different historical situation obliged us to begin at the other end. We have had "grammar schools" for almost two hundred and fifty years; but we have hardly yet succeeded in creating a university, though many second-rate high schools flourish under that name.

There seems to be an impression that gradually the relations of the elementary, grammar, and high schools to each other are settling into intelligible and reasonable order. Thus I read in a report to the National Council of Education: "There is a close connection between elementary and secondary education." But this is rather a hope than a consummation. Within ten days an agent of the Board of Education in Massachusetts has expressed to me his deep regret that there is so little connection between the lower schools and the high schools. It is not probable that in other States the relations of these classes of schools are better adjusted than they are in Massachusetts, but the gentleman to whom I have alluded states in a report of 1884 that, in a large number of high schools, the first year is given up to grammar-school studies, while many have only one, others only a few of the high-school branches proper, in the entire curriculum. "The high school furnishes a mixture, in many cases a muddle, of primary and secondary instruction."[1]

There is a tendency in the country districts to imitate the systems of cities; but every city and every country town or

[1] Report on the High Schools of Massachusetts, by George H. Martin, Agent of State Board of Education.

parish is independent of every other, and diversities of every kind and degree may exist in adjacent localities.

The State may or may not make certain prescriptions. It may require that arithmetic and physiology be taught, but there does not seem to result any appearance of uniformity in school curriculums; there is no common standard and no recognized goal.

The circumstances that determine the subjects of a school programme are various. The individual likes and dislikes of pupils for this or that study, the whim or hobby of some school-committee-man, the prejudice of a parent, the preference of a teacher, all count as elements in the decision as to what shall be included and what left out. There is little disposition to defer to authority. The local superintendent, or the principal, may be a man of experience, of sound judgment, and of learning, but his counsel may not be asked, or if it is, as a matter of form, be quite disregarded. The school committee is absolute. It may be composed of honest, modest, intelligent men. Unhappily it is sometimes not so composed, or it may be dominated by an energetic crank or ignoramus. The meetings of the committee are often secret, and their acts subject only to local criticism. Add the fact that the possession of a little power often strangely exalts men in their own estimation and blinds their eyes to their own defects, and we have all favorable conditions for the exhibition of acts of levity, conceit, and rashness. I have known a school committee, not a hundred miles from Boston, to concoct a course of study and order it put in operation without consulting either the superintendent or the principal. The principal was an able administrator and a successful teacher; he was liked and esteemed, and the committee meant no disrespect; it probably did not even occur to them that they were doing a thing for which they had collectively about the same fitness that they had to carve a statue of Athenē. I have known precisely the same thing done in one of the foremost cities of this country, at a time, too, when

the committee had in its employ a council of highly paid educational experts.

A comprehensive and absolute uniformity is probably neither practicable nor desirable. Allowance must be made for the different circumstances and needs of different communities. But neither present satisfaction nor hope for the future is to be got from such chaos as now exists. In a shifting population like ours, the lack of uniformity works great inconvenience, loss of time, and waste of money. A family moving from one community to another must commonly buy a new outfit of text-books, and as text-books, with us, are mostly made big for the profit of publishers, the expense is heavy. Children find themselves too far advanced in some subjects, too far behind in others to join classes with profit. Sometimes they must wait for the beginning of a term, in order that suitable adjustments may be made. I have heard a teacher of long experience say that a change of school commonly means a loss of three, sometimes of six, months in a child's education.

Great differences would naturally be expected among secondary schools. The preparatory schools and many academies make the fitting of boys and girls for college their chief aim. With high schools this is a subordinate end. But within each class of these schools there is an astonishing absence of uniformity. Except in so far as college admission requirements either set the fashion or determine the subjects that make up the school curriculum, and often even in consequence of the various demands of the colleges, great differences exist in the requirements for entrance, standards of excellence, branches of study, order of studies, and duration of the school course. Scarcely could two schools be found that would not show variations in some or all these respects. Some are higher schools only in name; some have a so-called business course; many have two courses, one English, the other classical; in some, elementary studies occupy a large share of time, in others, but little. The length of the course varies from two years to five and even six. This condition of

things would be deplorable, even if we did not look beyond the schools; but great injury results to the higher education. College instruction must be pitched at a low level not to be over the heads of many who have been but half-trained, and the best men are apt to get disgusted and grow idle. In my own class in college there were men who could neither read nor write a simple Latin sentence, and there were men who had received the splendid training of Easthampton Academy under Dr. Henshaw. The entire absence of any external regulative authority, or even of a superior advisory or consultative council, would naturally result in extreme diversity; but the influence, which, above all others, should have contributed powerfully to a tolerable organization of secondary education has unfortunately been its greatest obstacle.

Incidental reference has already been made to requirements for admission to college. The colleges of this country occupy a unique position. They are absolutely independent corporations, more independent than the universities of Germany, which have been said to be the most independent bodies in the world. They can arbitrarily fix, and have so fixed, the conditions of entrance. They contract or extend, raise or lower, their requirements without consulting the schools that feed them and without regard to each other; what they command, the schools that send up students must do. To disregard their prescriptions would be fatal to the reputation of any fitting school. It is evident, then, that these prescriptions are a mighty factor in our secondary education. They effectually determine what subjects shall be taught in every preparatory school in the land. As the duration of the course in these schools is usually only three or four years, and as the admission requirements cannot be satisfied in less time, it follows that the control of the college is comprehensive and complete.

But the influence of the colleges is by no means limited to the fitting schools; and this is a point of capital importance. The high schools are also feeders of the colleges, and in fact furnish more students to the colleges than do the fitting schools proper. From 1866 to 1890, both inclusive, 1758

students entered Harvard from public schools, and 1605 from endowed schools. During the same period from twenty-two to thirty-seven per cent. of all entrances to Harvard were from public schools.

The programmes of these schools must therefore be shaped to meet the needs of those, however few in number, who wish to prepare for college. Moreover the aggregate number of candidates for admission to college from high schools is no criterion of the number of schools represented. Probably few schools send more than five or six, many not more than three or four, some only one or two. "In 1890 no fewer than 122 schools and colleges contributed the 348 persons who entered [Harvard] College."[2] This is an average of less than 3 to an institution. But this is not all. Many private schools, not to be designated especially as fitting schools, prepare boys and girls for college; probably a still larger number do not. Add the large class of high schools that are not feeders of colleges. All these feel profoundly the influence of neighboring colleges and of the larger high schools. The inclusion of a subject in college admission requirements gives it a kind of sanction. The exclusion of another relegates it to a position of educational inferiority; hence it would be strange if, in the choice of studies, we found in the programmes of these schools great departures from those of schools immediately related to colleges. The same causes determine in great measure the succession of studies, the time allotted to them, and even the methods of instruction. The principal of a large and excellent private school in New York State, who seldom sends a boy to Harvard, told me that the new requirements for admission to Harvard had revolutionized the course of study in his school.

If these statements are true, and I believe they are indisputable, what a power it is possible for the colleges to wield, through united action, for the reasonable organization of secondary education! Has their great power been exercised hitherto to that end, or has it tended to a chaos worse con-

[2] See President Eliot's Report for 1890, p. 7.

founded? Let us see. In a general way the question has been already answered; but its great importance demands something more explicit. For a thorough and satisfactory exposition some very desirable information has not been attainable, but an examination of college catalogues will shed a little light. I am not able to state the exact number of institutions calling themselves colleges or universities in the United States, but it probably does not exceed 500. I propose to give some of the results of an examination of the catalogues of 487 of such institutions, including a few in Canada and New Brunswick. Forty-two of them have requirements for admission differing but little, except in a requirement of United States history, from those of a school in Boston with which I am tolerably well acquainted, that receives boys at eleven years of age, and of the grade of the third class in grammar schools. For the sake of being explicit, and to show how low these college requirements are, I give those of the school referred to:

1. Ability to read English readily and intelligently.

2. Ability to distinguish parts of speech, tenses, voices, cases, transitive and intransitive verbs.

3. Ability to perform simple arithmetical questions mentally.

4. Facility in working fractions, both vulgar and decimal, and compound denominate numbers.

5. Facility in writing legibly from dictation.

6. A knowledge of the most important, and (to children) interesting parts of geography, with outline map-drawing, from memory, of the Atlantic States, and of the western and southern countries of Europe.

It would hardly be possible to set conditions of entrance to college lower than these, without reducing them to zero. That alternative is indeed adopted by a surprisingly large number. No fewer than 148 so-called colleges seem to throw wide their doors to all comers; at least, their catalogues are silent on the subject of admission requirements. These are mainly southern and western colleges and not a few of them

are Catholic institutions. Nine have requirements but hold no examination. Of these the most noticeable are Washington and Lee University, Lexington, Va., and Clark University, Worcester, Mass. The latter admits only graduate students or those of equivalent attainments. To illustrate fully the diversity of college admission requirements would demand more space and time than are at the writer's disposal, and an exhibition of statistics that would tire the reader. But some notion may be conveyed by a few general observations and by a brief selection of facts touching important points. The subjects of the requirements are found to range from the merest rudiments of arithmetic, reading, and writing, up to the higher mathematics, Greek, moral philosophy, and the history of art. Let us draw illustrations from the four great departments of history, mathematics, science, and language. It is hardly an exaggeration to say that the histories of all states and all times are included, from Babylonian and Assyrian history, specially designated in the requirements of one college, and of Persian history, in those of another, down to the history of Texas and North Carolina, the former required by three, the latter by two colleges.

I have already indicated the range in mathematical studies, and we should naturally look for greater uniformity here than in other branches. Arithmetic is required by the greatest number of colleges, including bookkeeping or "commercial arithmetic," which is expressly demanded by fourteen colleges. Algebra comes next in order of uniformity. This branch is for some reason a favorite both with schools and colleges. In the high schools of Massachusetts there is no single subject that is so uniformly found in the course of study, and none to which more school time is devoted. Of those colleges that publish formal requirements, only 25 make no mention of algebra, but the number of those which do not examine in that subject is probably several times as great. Geometry is included in the greater number of catalogues, but 121 say nothing about it. Besides these we find trigonometry, solid geometry, analytical geometry, advanced algebra. Natural

science in some form is slowly working its way into college admission requirements, but as yet there seems to be no concensus of opinion as to what branch of science is most manageable in school classes, or best suited to develop and train the observing powers of children, or likely to prove most fruitful as a resource of interest and pleasure in after life. Physical geography, if that may be included as a natural science, occupies the first place, and is required by 162 colleges; chemistry by 16; botany by the astonishingly small number of 55; physics by 108; zoölogy by 23; geology by 9; biology by 2; astronomy by 17; "elementary science," without any more precise designation, by 12. Twenty-three colleges require neither Greek nor Latin; 66 Latin but not Greek; 220 require neither French nor German; 7 French, but not German; 17 German, but not French. Two make Greek optional; 39 German; 16 French. Two allow a choice between French, German, and Greek; one between French, German, and Latin; one between French, German, and Spanish.

At first glance there would appear to be an unexpected degree of uniformity in the matter of English. But a closer examination proves disappointing. Fourteen colleges require no special preparation in English. The most conspicuous of these, and, I believe, the only New England college, is Yale. It would be interesting to know why one of the foremost colleges in the land, and one of the ten associated colleges in New England, refuses to fall into line in respect to an English requirement. The most probable reason is that the feeding schools of Yale train their students so admirably in the correct and ready use of English that a requirement and examination in that subject is superfluous, either as a test or an incentive. Harvard is much less fortunate, since only about four in a hundred of its candidates for admission are found able to write a creditable essay, correct in expression, spelling, and punctuation. The English requirement in 82 colleges is some knowledge of English grammar. One hundred and thirty-two others ask for grammar and rhetoric or composition. To these illustrations of diverse subjects, a few of a miscellaneous sort

may be added. Four colleges require drawing; 14 the "Bible"; 23 Bible history; 5 political economy; 15 mythology; 8 United States Constitution; 3 moral philosophy; 1 history of art; 4 pedagogics.

Allusion has been made to optional substitutes, or equivalents of admission requirements. As a matter of fact many colleges allow equivalents in place of what I have been obliged to call, somewhat loosely, "requirements." Some colleges allow much freedom of choice, others but little. Some designate with minuteness what authors and what amounts will be acceptable as substitutes, others content themselves with a general statement that equivalents within certain limits are permissible. Now, if there were any aim at a degree of uniformity in options, it is clear that the difficulties that confront the schools in an endeavor to meet every diverse demand would be, or might be, sensibly mitigated. But when we see no evidence that similarity in requirements is even thought of as a good thing, we should naturally look in vain for any seeking after agreement in optional substitutes. Take, for example, substitutes allowed in natural science and history. Nine colleges allow astronomy in place of some other science; 4 geology; 22 botany; 11 zoölogy; 3 biology; 28 chemistry; 33 physics; 17 physical geography. In place of the assigned history, one finds these alternatives: general history, mediæval history, United States history, modern history. Take Greek. Of colleges requiring Greek, 150 do not require Homer; but it would appear that sometimes a portion of Homer would be accepted in place of some of the prescribed Herodotus, or even of some of the Attic prose. Some colleges allow New Testament Greek as an alternative, others Lysias.

One pupil may be fitting for a college that does not examine in Homer, but prescribes a certain amount of Attic Greek with an alternative. In the same class is another preparing for a college that requires certain books of the Iliad, for example, with the Odyssey as an alternative. Still a third must have certain other selections from Homer with Herodotus

as an option. Somehow the teacher might make a shift to unite the three in some part of the Greek instruction, but perfectly to suit the instruction to their different needs his class should be divided into three sections.

No doubt the purpose of the colleges in offering alternatives was to afford the schools some relief from their embarrassment in trying to satisfy very various demands. But in the absence, as has been shown, of any concert of action, each college indicates alternatives without regard to those of any other; and, considering what account must be taken of individual preferences in schools in choosing allowable substitutes, I am of the opinion that in offering options the colleges have added a fresh cause of distraction and confusion. That they have not afforded very effective relief, the following *suspiria de profundis*, drawn from a report on Secondary Education at Toronto, July 11, 1891, may be sufficient to prove. "A prominent high school of an eastern State reports, 'We are fitting boys and girls for twelve or fifteen different colleges, and no two require the same preparation." The principal of a well known preparatory school in New England says: 'The present diversity is distracting and demoralizing, unreasonable and unnecessary.' John Tetlow, in a paper on Modern Languages, written in 1888, referring to Harvard, Wellesley, and Smith, says: 'A class containing pupils fitting for each of these three colleges, must either be broken up into three classes in French, or must do at least double the amount of work required by any one college in the group.' "

But there are other diversities, apparent, implied, and hidden, not less troublesome to schoolmasters than those of subjects of study. A long chapter might be written on the different amounts, as well as the different kinds of knowledge with which secondary teachers must fit out candidates for college. This topic, however, I must dismiss with brevity, for materials do not exist for a thorough and satisfactory exposition. What the printed requirements of admission are, anyone can find out with time and patient search. What the real requirements are, nobody can discover, nor will any person ever be able to

discover, so long as college reports are so meager, or should I say so discreet? It will, of course, be understood that I am referring now to standards of excellence on the required subjects. What degrees of attainment in knowledge and in power are requisite? We have no means of guessing. If we could read the papers set, and knew something of the marking system, an approximate opinion could be formed. That great differences in standards exist, even where printed requirements show but little variation, is certain, and is known to every preparatory teacher of large experience. I happen to have personal knowledge of some facts that confirm what has been said. I recall two instances of the rejection of young men, and justly, for lack of proper preparation, at a certain college, who were immediately received at other colleges. Three others could not be recommended for the college where they wished to enter, and indeed would have had no chance of passing the examination, but were admitted without conditions at a neighboring college. Cases are frequent of boys leaving school a year before completing a course designed expressly to fit for college, and entering triumphantly, to the hurt of the school from which they go and the college that receives them.

It is generally believed that forty per cent. of correct answers will pass a boy at Harvard, and there are excellent reasons for believing that the standard is not higher. If this is true, then at many other reputable colleges the standard on the admission examination is probably not above thirty, or even twenty-five per cent.

It now remains to be said that a great number of colleges have no standard at all. That is to say, they admit students on certificate from schools of the most various character and quality. The practice of admitting students on certificate is unfortunately becoming more and more common. No fewer than 177 accept certificates in place of an examination in all subjects, some in certain subjects but not in all. Probably a considerably greater number than that stated admit on certificate, for it is certain that colleges that make no announce-

ment in their catalogues that they will accept certificates in place of examination do, nevertheless, freely admit on certificate. Conspicuous examples of New England colleges are Amherst and Brown. According to President Eliot's Report for 1889–90, page 90, Harvard and Yale are the only New England colleges that examine students for admission; at least, that would seem to be the meaning of his words; but in the catalogues of Amherst, Brown, Wesleyan University, Bates, etc., under "Admission" one fails to see any implication that there is any other gate of entrance except by that of examination. How the New England colleges that accept certificates in place of examination satisfy themselves of the efficiency of the instruction which applicants for admission have received, is not known. I am not aware that any one of them undertakes to make an official inspection of fitting schools. In other parts of the country this is done, or said to be done. Ninety-seven colleges, it would seem, inspect preparatory schools, or in some way satisfy themselves that certain schools deserve to be designated as "approved" or "accredited," and thirty-seven publish lists of "approved" schools.

We have now seen something of the diversity of subjects, and of the diversity and the absence of ascertainable standards in the admission requirements. But our examination would be very incomplete, if we did not consider the effect upon secondary schools of the nature of these requirements and of the method of testing the applicants' knowledge and power, where examinations still obtain. Printed requirements, as they are found in college catalogues, are and must be more or less indefinite. Examinations supplement and in some measure interpret these general statements. Examination papers show what kind of knowledge and power the colleges desire and value most; they indicate where the emphasis should be laid in the instruction in every subject. They furnish in a general way a kind of syllabus in every branch of study as a guide to teachers. If, for example, in a succession of history examinations, the causes and relations of great events are made prominent and names and dates are but little

inquired about, the college says, in effect, "you see how we think history should be studied." I have seen a profound change wrought in schools that prepare for Harvard College, in the teaching of Greek, solely from a different mode of examining, without any announcement by the college that a modification of the instruction in the schools was desired. For some years Harvard was satisfied in the Greek examination with the test of double translation, that is, from Greek into English and from English into Greek; and in my opinion no better test has been, or can be, devised, no test at once so fair and so searching, and none so stimulative of the most fruitful method of teaching. Then there came a change in the mode of examining without any reason given, without conference with teachers, and without warning. For a number of years there has been a reversion to the old way, and formal questions in grammar constitute a not unimportant part of the examination. It is accordingly necessary now to "get up" formal grammar. The questions are not unreasonable, and it may fairly be said that candidates ought to possess the knowledge called for; but a boy may know much that he cannot state well, and in writing Greek he may be able to make a correct application of principles that he has acquired unconsciously and yet be unable to formulate his knowledge. Accordingly the time devoted to Greek in school can no longer be directed to the single purpose of ultimately opening to the learner the treasures of Greek literature through a method that shall be the best training of the mind. I have been told on excellent authority, that is, by a gentleman whose whole time is given to the inspection of schools, especially high schools, that the Harvard mode of examining in physics is revolutionizing that study, at least in Massachusetts. A change not less remarkable nor of less educational value, in the teaching of geometry, can be traced directly to the influence, not of altered requirements, but of a decided change in the character of the papers set at the Harvard examination. Not very many years ago a student could count on passing creditably in geometry, if he could reproduce the demonstrations of his

text-book. The test might, therefore, be one of memory. Now he is called on to prove propositions that are probably new to him, and to solve original geometrical problems. That is, the test is one of power. The same is true, in the main, of the examinations in Latin and Greek. The candidate must show that he can do a certain thing, not merely that he remembers something that he has learned. The improvement in classical teaching, and the fresh interest imparted to the study as a consequence of a change seemingly so slight, can hardly be estimated.

Let us draw another illustration, and it shall be the last, from the examination in English common to all the associated colleges of New England with the exception of Yale. The colleges happily conceived the idea of stimulating the schools to better work in English, and it was proposed to bring this about by requiring the reading of certain works and the power to write an essay of moderate length at the examination, in a given number of minutes, on some subject drawn from one or two of the books assigned to be read. The schools responded with great interest and activity. In no subject connected with their work have teachers shown more earnestness of purpose, or put forth more honest, energetic effort. How to awaken interest, how to conduct the reading of the prescribed books, what are proper subjects for compositions, how should compositions be corrected, what amount of practice in writing is requisite, what proportion of time should English have in a school curriculum, these, and many other questions, have been meditated and discussed without end. With what results? I answer, with results, as measured by college examinations, and as tested by college examiners, profoundly disappointing. What Tufts College and Harvard College think of the training in English, as indicated by the essays written at the examination, is well known. Hardly so many as four or five in a hundred are found able to pass creditably the test at the last named institution. This is deplorable enough. On this subject there is general discouragement in the schools, and almost universal dissatisfaction. Success appears to be largely a matter of

chance. Faithfulness and hard work on the part of the pupil, patience, knowledge, and skill on the part of the teacher, do not seem to tell. It is of course absurd to suppose that not more than five in a hundred are well trained in the schools. What is the matter? In my judgment the trouble lies in the method of examining. The candidate must be ready to produce an essay in about one short hour, under the most trying conditions, on some one of four or five topics picked out by the examiner from any one or two of the whole ten or twelve volumes prescribed! Nothing can be said against a requirement that certain books shall be read, and there is no reasonable ground for complaint in the choice of books. Furthermore that candidates should be required to show that they can write correctly is not unreasonable. Still I have never conversed on the subject of this examination with any person of mature years who was conceited enough to suppose that he could do what is demanded of youths of eighteen. I have heard many schoolmasters say that they could not possibly pass the examination, after taking a class through the prescribed books. But success in passing the examination is, after all, a minor matter. The peculiar mode of examination, I mean particularly the imposition of an essay on some one of a half-dozen topics that the examiner may select out of many thousand possible ones, obliges the pupil to "get up" the books prescribed in such a way as to kill very effectually all pleasure in those works, if it does not breed utter disgust for good literature generally.

Here we have a very beautiful and striking illustration of the mischief that may result from a vicious mode of examining.

As distinct then, to a certain degree, from the subjects and the content of college requirements, the character of the examinations exerts a great influence for good or ill.

It has all along been implied that secondary schools are quick to respond to the formal and the implied demands of colleges, so far as their circumstances allow. They do this both because they must and because they desire to. They

are ambitious, probably too ambitious, to send their students primed to pass successful examinations. The reputation of schools that are feeders of colleges depends—not, indeed, so much with the colleges as with the general public—on the success of students in passing with credit the entrance examinations. Those schools rank highest that have the fewest students rejected or conditioned. Hence, skill in anticipating the sort of problems that will be set, the questions that will be asked, the passages given for translation, the subjects for composition, etc., becomes an important factor in a teacher's success and in the standing of his school. If a teacher, as sometimes happens, uses his best efforts to minify the importance of the entrance examination in the minds of his pupils, to interest them in study for its own sake, and to give a large and liberal training, he commonly finds himself too weak to stem the combined currents of public and private feeling. In the eyes of parents and pupils the entrance examination is the goal of study and aspiration. It is the center of interest, and knowledge does not pay that has no relation to that crowning event.

The power of the colleges, through means and by ways already indicated, to lift our secondary schools seems to me to be hardly appreciated by the colleges themselves; for, if it were, one would think they would long ago have addressed themselves earnestly to the study of the matter, and that they would have invited the counsel and co-operation of schoolmasters as to the best and most possible ways of advancing the standards of admission. Twice within twenty years the faculty of Harvard College have specially invited the heads of important schools from different parts of the country to meet them for consultation, and those meetings proved of great practical usefulness. Several important additions and modifications in the requirements resulted from the suggestions of teachers; others, proposed by members of the Faculty, but thought by the teachers undesirable or impracticable, were withdrawn. Have such conferences been held by other colleges? I have not known of any. But why should they not

be? The colleges would be sure to meet with the readiest sympathy and the most hearty co-operation from schoolmasters. It will probably be admitted that a great advance has been made in the amount and quality of the work of secondary schools within twenty years. Of this gain, surely no inconsiderable part has been brought about under the stimulus of improved and increased admission requirements. The promptness and energy with which the schools have responded to greater demands will in coming time be regarded as an astonishing fact in the history of education. Mr. William F. Bradbury, headmaster of the Cambridge Latin School, in summing up the increase of the Harvard requirements, says:

"There have been added to the requirements of 1870, French (or German), to which in the Cambridge Latin School not less than four hundred recitations are given; physics, not less than two hundred; English, not less than three hundred; that is, in all, an increase of not less than nine hundred recitations; or, counting two hundred recitation days in a year, with three recitations a day, this makes just a year and a half's increase in the time of preparation. There is no question that, with the greater difficulty in the Latin and Greek composition, in the algebra, and geometry papers, in the addition of French, physics, and English, Harvard College has herself made such demands as, with an equally thorough preparation, ought to increase the age of the candidates not less than two years."

Mr. Bradbury even understates the increase. Till within a few years Harvard designated the amount of reading in Latin and Greek; so much Anabasis, so much Cæsar and Vergil; nay, the books were indicated from which passages would be chosen for the examination. Now the mode of examining, setting passages previously unseen, amounts to a great increase in the requirements.

Formerly the first three books of the Iliad, about 1500 lines, was the requirement in Homer; now the candidate must be able to translate average passages selected at random from the Iliad and the Odyssey. It is not safe to send up boys now,

who have not read double the former amount. Moreover, concurrently with this prodigious increase in the college requisitions, has gone on a diminution of the school year, from 258 days in 1860, to 200 days at present; so that, as Mr. Bradbury observes, there were more schooldays in *four* years then than in *five* years now.

From all that has been said, it ought to be apparent that an immense responsibility rests upon the colleges in respect to secondary schools. It is right that the colleges should consider first their own needs; it is not right that the highest interests of the schools should be disregarded. But there is no incompatibility. On the contrary there is a unity of interests, and it is only necessary that there should be a full recognition of the natural and necessary relations of the two classes of institutions greatly to advance the good of both. A great gulf has separated them. Recently the subject of shortening the college course by a year was discussed with great vigor and earnestness, at least in New England. Such a step was certain to react upon the schools directly and powerfully; but who, in all that discussion, saw so much as an allusion, or at most, more than an allusion from any college source, to its effect on the schools? College presidents and professors joined in the debate, but each and all utterly ignored the schools. To their minds evidently college education is a thing apart, distinct in its nature, scope, and aims, not a continuation of secondary education. Hardly was any voice heard from the schools. There was no recognition that this was a subject of common interest. I repeat, a great gulf has existed between the schools and the colleges. They ought to begin to draw together. The schools have greatly benefited and greatly suffered from the action of the colleges; but the injury has been accidental, and the good has been mostly unforeseen and unpurposed. One important and promising step has been taken toward closing up the chasm between the two classes of institutions, by the formation of the New England Association of Colleges and Preparatory Schools. Why should not other associations of the same kind be formed all over the country?

I find in a report on "Uniformity in Requirements for Admission to College" presented to the National Council of Education, at Toronto, to which reference has already been made, a suggestion that "educators should make the question [of uniform requirements] a national one." This is much too ambitious a scheme. The partial exhibition, in this paper, of the enormous range and variety of requirements, coupled with the extreme diversity of standards of admission, shows that such a plan is as impracticable as it is undesirable. But one sees no reason why groups of colleges having somewhat similar standards should not unite themselves for conference with preparatory schools, to the better understanding and advancement of both.

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III.

A STATISTICAL STUDY OF MEMORY AND ASSOCIATION.

The statistical method has been successfully applied to various departments of mental science; and, indeed, not a few of its problems seem most promising of results when thus studied. General tests of the various mental faculties, and circulars requesting descriptions of personal mental traits, are no longer a rarity, and their use will probably be extended as the experimental basis of psychology becomes more generally recognized. With the double object of interesting the members of my class in psychology in their own mental processes, and of gaining material for such statistical study, I have at times tested their processes of memory and association. On one occasion they each wrote one hundred words as rapidly as possible; fifty such lists I studied with reference to the community of ideas, the nature and time of the associations therein exemplified, as well as to the comparison of the masculine and feminine traits of mind. The results of that study will be brought into comparison with those of the present study. My present data are some seventy lists of words obtained as follows: The withdrawal of a screen revealed a word upon the blackboard, whereupon each member of the class wrote upon a slip of paper the first word suggested by the word upon the board, and folded the paper so as to conceal what had been written; another word was then similarly shown and the process repeated until each student had written ten words. The ten original words were all very common monosyllables, selected for various points on the basis of my former study. The words were: I. BOOK; II. MAN; III. TREE; IV. CAT; V. HAND; VI. HAT; VII. BREAD; VIII. PEN; IX. WRITE; X. BLUE. Secondly, just two days later, and without the slightest expectation on their part, the students were asked to write as many as possible of the words

they had written forty-eight hours previously, and to regard the order. I then wrote the original ten words upon the board and again asked them to write in order as many as possible of their associations recorded two days previously. Let us call the results of the first test the "original lists," of the second, the "A lists," of the third, the "B lists." The first show the most accessible associations to ten common words; the "A" lists show to what extent such can be recalled by memory alone, upon short notice, and when written with no expectation of future use; the "B" lists show to what extent the recollection is aided by the presence of the suggesting words.

First as to the unaided memory. I have 70 original lists, or 700 words, written by 42 men and 28 women, or in the proportion of $\frac{3}{5}$ and $\frac{2}{5}$; of A lists I have but 64 serviceable ones, contributed by 39 men and 25 women, on which appear but 411 words; that is, 35.8 per cent. of the words have been so far forgotten as to be beyond voluntary recall after 48 hours interval. This includes 72 cases in which wrong words (often of kindred meaning to the correct ones) were written, so that but 339, or 53 per cent., were correctly remembered, and not a single student correctly remembered all ten words. One student recalled nine words correctly; 4 eight words; 9 seven words; 17 six words; 13 five words; 12 four words; 4 three words, and 4 only two words. The attempts at recalling the original order of the words were very unsuccessful; in the best record six words were written in their original order.

In the B lists, in which the original suggesting words are furnished, I find a considerable increase of words correctly recalled; for in 67 lists there appear 640 words; or only 4.5 per cent. are entirely forgotten, and 536, or just 80 per cent., are correctly recalled. On the average each student recalled 2.7 more words with the aid of the suggesting words than without them. Sixteen recalled all ten words correctly; 16 recalled nine words; 14 eight words; 6 seven words; 7 six words; 5 five words; 2 four words, and 1 three words—a very marked improvement upon the A lists. Roughly speaking, the average

student remembered 5 of 10 words by memory alone, and 8 of 10 when the suggesting words were furnished.

To determine how this forgetfulness is distributed over the associations to the ten different words, we may count the number of correctly remembered associations under each, both for the A lists and the B lists. In so doing I observe that

	Book	Man.	Tree.	Cat.	Hand	Hat.	Bread.	Pen.	Write.	Blue.	Average.	Average Deviation.
A.....	33	48	36	47	15	23	53	32	25	27	33.9	28.6%
B.....	48	54	54	57	51	47	64	57	44	60	53.6	9.1%

while the number of words recalled by memory alone differs markedly according to the suggesting word, the differences after the words are furnished are relatively slight; in the first case from a minimum of 15 to a maximum of 53, with an average variation of 28.6 per cent.; in the second case from a minimum of 47 to a maximum of 64, with an average variation of 9.1 per cent. The various words vary much in their tenacity in their power to fix their associated words in the memory; as many as 70 per cent. of the words associated with Bread, Man, and Cat were correctly recalled; but only 30 per cent. of those associated with Hand, Hat, and Write. It appears, too, that of the ten original words, those having the fewest remembered words connected with them (*i. e.*, by memory alone) profit most by the supplying of the suggesting word.

Perhaps the most interesting point in the original lists is the community of association, or the proportion of cases in which a word suggests the same word to different persons. We most quickly reach a result by counting the number of different associations occurring in the entire lists; I find that only 241 of 700 words are different, or 65.6 per cent. are formed by the repetition of the same associations. In my former study there were only 27 per cent. of cases in which when

the same word was written by different persons the following words were also alike; there the word was spontaneously and variously arrived at, here the word is given; and this difference must in large part account for the different ratios of community of association. Again, dividing the words into five divisions, I find one fifth composed of 140 words occurring but once, a second fifth of 61 words occurring 2 or 3 times; a third fifth of 26 words occurring from 4 to 9 times, a fourth fifth of 9 words occurring from 9 to 23 times, and a final fifth of 4 words occurring from 29 to 44 times. The ten most frequent associations are *pen-ink* (made by 44 of 70 persons), *cat-dog* (38 persons); *hand-finger* (30); *bread-butter* (29); *man-boy* (23); *man-woman* (21); *blue-red* (19); *tree-leaf* (13); *hat-cap* (12); *hand-foot* (11). With these very common words it becomes possible almost to predict the word it will most probably suggest on the basis of independent but similar brain-functioning. Such results emphasize the lesson that our mental processes are not so individual and distinctive as we are apt to think, and that both in small and great matters we have much in common by inheritance and training.

In attempting to study the nature of the associations our task is made difficult for lack of a generally recognized system of classification; the best that I can do is to adapt a classification that was suggested by the words themselves and seems simple and significant; (I) whole to part or general to special, such as tree-leaf, or tree-oak; (II) part to whole or special to general, hand-arm, blue-color; (III) object to activity, as pen-write; (IV) activity to object, write-pen; (V) object to quality as tree-green; (VI) quality to object, as blue-sky; (VII) by natural kind or one object suggesting another of the same class, as cat-dog, both being names of animals, *bread* suggesting other articles of food, *blue* other colors, and the like; (VIII) by similarity of sound as man-can, write-height; (IX) miscellaneous, including all that are ambiguous or not easily classified. These nine types of association are present in the following proportions:

	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
Number.....	121	9	13	39	48	10	342	36	82
Per cent.....	17.3	1.3	1.9	5.6	6.9	1.1	48.8	5.1	11.7

The most striking predominances of association by *natural kind* (agreeing with my former study); other prominent ones are those from whole to part and from object to quality.[1] We note, too, that the association in one direction is stronger than in the reverse; that associations from whole to part are more frequent than from part to whole and the like; it has also been found that the former process takes less time than the latter.[2]

There are several other problems which it would be of interest to study, but for which our data are hardly sufficient; amongst these the possible differentiation of the associations

[1] It should be noted that (IV) and (VI) could hardly be well represented, there being but one verb and one adjective; the indication is that the association from an activity to an object connected with it is a very strong one.

[2] To test the constancy of such results under varying conditions, I will compare them as far as possible with those reached by Prof. Cattell; he studied the associations of 400 to 500 persons to some common words. The three words *tree*, *hat*, and *hand* occur on both his list and mine, and the following are the most frequent associations on both lists in their order—on the whole a fair agreement.

Tree.				Hat.				Hand.			
Cattell's.		My Words.		Cattell's.		My Words.		Cattell's.		My Words.	
Leaf.....	212	Leaf.....	13	Head.....	70	Cap.....	12	Finger.....	219	Finger.....	30
Branch.....	45	Branch.....	7	Feathers...	46	Head.....	10	Nail.....	23	Foot.....	11
Green.....	28	Green.....	4	Straw.....	41	Band.....	9	Arm.....	20	Arm.....	6
				Ribbon.....	33	Bonnet.....	5	Foot.....	15	Mouth.....	4
				Bonnet.....	32	Feather.....	3				

Cattell has shown that the word influences the kind of association; thus *tree*, *hand*, and *book* invite analysis and have several prominent parts, *man* and *cat* even more than other words suggest objects of their kind. He finds, too, that associations from "whole to part" and the like are more frequent than in the reverse direction, and other points of agreement would doubtless appear were the data of the two studies similarly treated. It may also be noted that both in Cattell's results and in the present study nearly all of the very common original words (in my results 7 or 8 of the 10) have one certain association much more common than all others; *man* has *boy; tree, leaf; cat, dog; hand, finger; bread, butter; pen, ink; blue, red.*

recalled from those forgotten, demands a moment's notice. Two suggestions present themselves, first that the kind of association influences the ease of recollection; second, that the frequency or commonness of the association is the important factor. A count of the proportion of remembered associations in each of the nine types, negatives the first supposition (the only distinct result is that associations by natural kind are about 4 per cent. more frequent in the A lists than in the original lists); while a division of the words of the original lists into an unusual, a medium, and a common third shows them present in proportions of 31.9 per cent., 30.5 per cent., and 37.6 per cent. in the A lists, and 28.4 per cent., 33.4 per cent., and 38.2 per cent. in the B lists, thus suggesting that the more common associations are somewhat better remembered than the more unusual ones. I also failed to find any constant characteristics by which to distinguish the words appearing on the B lists, but not on the A lists, from the rest.

My final point will deal with the comparison of the men and women, and first as regards their powers of memory. In all the A lists 35.8 per cent. of the words were completely forgotten and 53 per cent. correctly recalled; but of the words written by the men 40 per cent. were completely forgotten and 49.8 per cent. correctly recalled, while the women forgot only 29.2 per cent. and correctly remembered 58 per cent.; thus indicating *a very appreciable superiority of memory in favor of the women.* Other interesting points are that the associations to *write*, *book*, *tree*, *pen*, and *man* are relatively better remembered by the women, those to *hand*, *hat*, and *bread* relatively better by the men; that 10 men and 15 women remembered their associations to *write*, 13 men and 2 women those to *hand;* and, finally, that while 16 men recall fewer than five words only 3 women do so, and while 15 men recall more than 5 words 16 women do so, there being half again as many men as women.

The B lists of the men and women, on the other hand, are substantially alike; in other words, the furnishing of the original word aids the men more than the women and thus

makes the proportion of totally forgotten and correctly recalled words the same for both—men, 5.5 per cent. and 79.5 per cent.; women, 3 per cent. and 80.7 per cent.

Regarding community of association my former study shows that in spontaneous and unrestricted association this is markedly greater in women than in men, and also that the extent of such community varies with the number of persons tested.[3] To gain a fair basis of comparison I selected by chance lists of 42 persons ($\frac{3}{8}$ men and $\frac{5}{8}$ women) to compare with the lists of 42 men, and similarly chance-selected lists of 28 persons to compare with the lists of 28 women. The result shows no clear difference between the two sexes. Percentage of repetition in 42 combined lists 56.7 per cent.; in the men's lists 56.7 per cent.; in 28 combined lists 53.2 per cent., in 28 women's lists 55 per cent. It would seem, then, that when common words are given the tendency to repeat one another's associations is not stronger in women than in men, though in all tests in which an unrestricted choice is allowed it has appeared markedly greater in women. There are, too, certain more special preferences, such as that men favor associations *by sound* and *from part to whole*, women from *whole to part* and *from object to quality* (both also appearing in my former study), which the present data strongly suggest, but cannot establish as beyond the influence of chance.

After I had completed the study of the association and memory processes in college students, I was given opportunity, through the courtesy of Professor Peckham, Principal of the Milwaukee High School, to make a similar test upon some of the classes in his school. It would certainly be interesting to tabulate for high-school pupils results parallel to those obtained for university students, and trace in such a comparison what difference the five years of schooling that

[3] The increase of the percentage of repetition with an increase in the number of persons tested appears thus in the present study: with 14 persons it is 36.4 per cent.; with 28, 53.2 per cent.; with 42, 56.7 per cent.; with 70, 65.6 per cent. This point is worthy of a more detailed investigation.

separates the one from the other had brought about. Such a comparison should rest upon more extensive data than those at my command, and the conditions of the test should be precisely similar in the two cases. The Milwaukee tests were not personally conducted by me, and differ further from those made at the university, in that three days instead of two days intervened between the writing of the original lists and the remembered words, and in the large proportion of cases in which repetitions of the original word occur as associations. Regarding the former it has been shown that the curve of forgetfulness is not greatly different after 72 hours from what it is after 48 hours. The number of repetitions seems due to the fact that the question was asked whether such associations were allowable, and the answer given that they were allowed but not desirable. However, I have made a special count of such repetitions and find that they do not affect the general result in any respect that will be here touched upon. I therefore feel justified in adding a number of suggestive comparisons between high school and university in order to stimulate further research in this direction. To facilitate the comparison I will add everywhere in parentheses with the initials *U. S.* the corresponding results for the university students.

I have 100 available lists (52 boys, 48 girls), or 1000 words in all. On the A lists I find 516 correctly remembered words, or 51.6 per cent. (U. S. 53 per cent.), and 420 or 42 per cent. (U. S. 35.8 per cent.) entirely forgotten; on the B lists 795 words, 79.5 per cent. (U. S. 80 per cent.), correctly recalled, and 48, 4.8 per cent. (U. S. 4.5 per cent.), totally forgotten. On the average each pupil remembered 2.8 (U. S. 2.7) more words with the aid of the suggesting words than without them. The general outcome is thus the great similarity of the results in the two cases, whatever difference there is being in favor of the university students. Even the distribution of the correctly remembered words among the associations with the ten original words is strikingly alike; and we find that the percentages of the remembered words in the two

tests differ on the average by only 2 per cent. in the A lists, and 1.1 per cent. in the B lists. There is some indication that the first and last words give rise to especially easily remembered associations in high-school pupils. The statistical regularity of the results is thus emphasized, and corroboratory evidence gained of the value of this method of study.

A comparison of the mental community in the two tests must, in the main, be limited to the number of different words occurring in the entire lists. I find 331 such, or 66.9 per cent. (U. S. 65.6 per cent.). The differences in the conditions of the test prevent any detailed comparison, but the number of words occurring once only, 237, or 23.7 per cent. (U. S. 20 per cent.), and the fact that a few words, 7 (U. S. 4), make up one-fifth of the entire lists, illustrate the close similarity of the results of the two tests in this respect.

The nature of the associations is hardly susceptible of direct comparison. Under this head I will merely call attention to a few interesting facts. While the pupils were writing their associations to "hat" some musicians were playing on the street, and we find "music" to be the associated word 44 times, and in addition such words as *bass*, *drum*, *play*, *cornet*, *band*, *trombone*, *orchestra*, etc., making in all 71 words referring to music and not to "*hat*." This admirably illustrates the effect of accidental concomitants in association as well as the readiness with which the juvenile mind is distracted. Some preferences for a certain association may be observed quite different from the preferences evinced by university students. Thus the latter associate *butter* with *bread* (29 of 70) but the high-school pupils mention *eat* (15) and *pie* (15). With man the university student connects boy (23) or woman (21); the high-school pupil "girl" (27). With "blue" the former associates "red" (19), the latter "color" (26) and so on; while in each the word frequently mentioned by the one occurs rarely or not at all in the lists of the other. There is thus considerable indication that a detailed study of strictly comparable data in the two cases would yield significant and valuable results. We take up next the differences between the sexes;

on the A lists the boys remembered only 41.5 per cent. of their associations, while the girls recalled 62.5 per cent. (U. S. 49.8 and 58 per cent.), showing as before and still more marked the superiority of the feminine mind in the matter of memory. The boys totally forgot 51.3 per cent. (U. S. 40 per cent.) and the girls only 31.9 per cent. (U. S. 29.2 per cent.). In test B the boys remembered 72.1 per cent. (U. S. 79.5 per cent.) and forgot 6.3 per cent. (U. S. 5.5 per cent.); the girls recalled 86.3 per cent. (U. S. 80.7 per cent.) and forgot 3.1 per cent. (U. S. 3 per cent.). As before, the difference between the two sexes is lessened when the suggesting word is supplied. Regarding the extent of the difference between the two sexes in high school and university, it is clearly greater in the high-school pupils; it also appears that, while university boys remember better than high-school boys, high-school girls remember better than university girls. Moreover it is true that, as with the university students, the boys remember better their associations to "hat" and "bread," the girls better those to "write," "book," "pen," and "man." There are, too, sexual preferences for certain associations; *e.g.*, "Blue" suggests *dress* to six girls, but not once to a boy. All these conclusions are suggestive but require further confirmation.

The community of associations is here readily investigated because the numbers of boys and girls are so nearly alike (52 boys, 48 girls), and the tendency found in all similar studies but hardly suggested in the university tests is here clearly manifested; that is, the greater community of association amongst women than amongst men. The girls use only 134 different words while the boys use 208; and in the girls' lists there are only 91 words that occur but once, while in the boys' lists there are 148. All this is indicative of the greater tendency for women to repeat one another's thought, the greater individuality of the thought processes of men.

It has not hitherto been mentioned that the high-school pupils belonged to two classes, 42 of them—25 boys and 17 girls—to the first year (average age 16 years, 3½ months), and

58 of them—27 boys, 31 girls—to the third year (average age 17 years, 9½ months). The intention was to consider separately and compare the results of the two classes, but the data hardly warrant such detailed treatment. I have, however, counted separately the number of correctly remembered words in the A and B lists for the two classes, with the following result.

	First Year.			Third Year.		
	Total.	Boys.	Girls.	Total.	Boys.	Girls.
A.....	201=48%	104=41.6%	97=57.1%	315=54.3%	112=41.5%	203=65.5%
B.....	318=75.7%	178=71.2%	140=82.4%	475=81.9%	203=75.2%	272=87.8%

We infer that the third-year pupils have better memories than the first-year pupils, the superiority being contributed in greater share by the girls than by the boys; and again that the difference between the two sexes is more pronounced in the third-year than in the first-year students, though in both cases it is greater than in university students. How far these results are typical, how far accidental, future research must decide.

I have thus described the most important results of a simple test of memory and association in a few classes of students. Such results become more valuable when compared with like results obtained by other experimenters with other classes of persons and under varying conditions. But even in their present form I venture to think that they bring into clear relief certain aspects of everyday and useful mental processes, not otherwise easily illustrated. They have, too, several practical bearings upon disputed problems in education and in psychology, which, with an increase of data, will increase in value and applicability.

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IV.

COLLEGE ATHLETICS AND HEART DISEASE.

DOES THE PRACTICE OF ATHLETICS TEND TO PRODUCE HEART DISEASE?

A few months after the opening of the Hemenway Gymnasium at Harvard University in 1880, it was reported in the daily papers "that at least half of the men examined were afflicted with palpitation of the heart on account of cigarette smoking and coffee drinking." This item was taken from a humorous article that appeared originally in one of the college papers.[1] It is hardly necessary for me to state at this late day that this assertion was not true, and should never have been extracted from the original context and considered seriously by the daily press. Nevertheless it was so accepted, and went on its errand of misrepresentation. Similar statements have also been made from time to time as to the prevalence of heart disease among college athletes. Unfortunately for any cause, no statements are so damaging, or so likely to become crystallized into public opinion, as those which have some slight foundation in truth.

No physician will deny that the drinking of strong coffee and the excessive smoking of cigarettes do induce in some persons a functional disturbance of the heart. No physician who has had any experience in examining men who make violent physical efforts, whether in the practice of athletics, or in manual labor, can doubt that such efforts often create in some individuals considerable cardiac excitement, which, if long continued, might lead to serious results. Now the important questions are:

1. What kind of heart troubles are most likely to arise from over-exertion?

[1] *Harvard Echo*, February 10, 1880.

2. What are the exercises and conditions that cause the greatest cardiac disturbance?

3. How large a per cent. of those persons practicing athletics are injured by their physical exercises?

4. What was the condition of the men injured or likely to be injured at the time of their entering athletic contests?

5. What are the precautions to be observed in practicing athletics?

It is impossible to treat these questions as fully as their importance demands in the space allotted to this article.

For many reasons I should have preferred not to take up the influence of athletics upon the health, until I could tabulate all the data I have at hand, and draw conclusions of more value. The pressing inquiries I have had from different sources during the past year, on this particular phase of the subject, are the only excuse I have to offer for writing such an article at this time. I shall only attempt, therefore, to take up such points as will help to remove from the popular mind some of the false notions entertained in regard to the general subject, and perhaps sound a note of warning against the practice of athletics under certain circumstances.

"Life is organization in action," says Béchard, and this action depends largely upon the circulation of the blood which supplies all parts of the body with nourishment. The heart is the organ which forces this life-giving fluid through the blood vessels to all the tissues, and removes the waste matters which result from tissue changes and vital action. In this respect the heart is like a central engine with a pump that forces water through a building or a city. Any failure of the heart to properly perform its functions not only weakens other parts of the body by overworking them, or by depriving them of their share of nutriment, but also impairs its own efficiency for the same reasons. If this impairment continues for some time, disease of the heart itself or of some part of the organism will be the inevitable result.

The normal pumping capacity of the heart is 70 strokes a minute, that is 100,800 strokes in twenty-four hours, by

which it sends about 40,000 pounds of blood through the lungs and body. Under the influence of stimulants, intense mental excitement, or violent physical exertion the heart's impulse frequently runs up to 150, and even 180 times a minute. After this increased amount of work the heart, like any other muscle, needs an increased amount of rest, but inasmuch as it has to keep pumping day and night to sustain life, the only rest it gets is in the relative decrease of the number and power of its strokes or impulses. If the heart does not get a sufficient amount of rest, its muscular tissues will gradually lose tone and become relaxed and over-stretched, just as the muscles of the body do when subjected to a long continued strain, and finally the chambers of the heart, or the large blood vessels, will become permanently dilated. If the over-exertion be still continued then one of the valves of the heart may be ruptured, or the inner coat of a large artery be cracked and torn, giving rise to what is termed an aneurism. Oftentimes the heart becomes enlarged, or hypertrophied, in response to the demands made upon it, and perhaps this is the development most to be expected from over-exertion. This increased size and strength of the heart often compensates for the weakness that accompanies dilatation, and where the person is young and still growing the enlargement is something that usually takes care of itself. These structural changes in the heart and blood vessels are seldom brought about without some premonitory symptoms. A fatigued muscle makes itself known by a sense of weariness often accompanied by pain. A fatigued heart is never felt as such, but manifests itself by very rapid beating or unusual slowness, irritability, irregularity, intermittent action, fluttering and prolonged palpitation and hurried and distressed respiration. These are the warning signs, and heart-strain, dilatation, aneurism, or hypertrophy are the affections that are usually attributed to over-exertion.

What are the exercises and conditions that cause the greatest cardiac disturbance? According to medical authorities, the occupations most likely to give rise to heart troubles are those of carpenters and joiners, iron-plate workers, porters,

miners, longshoremen, soldiers, postmen, long distance pedestrians and professional athletes.

When we come to inquire into the specific effect of exercise upon the action of the heart, we find it varies considerably according to age, sex, time of day, season of the year, the condition of the individual, and the circumstances under which it is taken. The average impulse of the heart when lying down, keeping absolutely quiet, is 70 per minute, when sitting up 80 per minute, and when standing 82 per minute. All forms of exercise tend to increase the action of the heart. The greatest disturbance is caused in the shortest time by a continuous muscular strain, as in doing slow strength work on gymnastic apparatus, in lifting heavy weights, attempting to elevate heavy dumb-bells, sustaining the weight of two or three men on the shoulders as in posturing, and the practice of the "tug of war," as it is called. In all of these exercises the muscles of the limbs are under great tension and the muscles of the thorax are contracted so that there is little movement of the chest. This tends to create a blockage in the circulation during the violent exertion, and as soon as the strain ceases the heart is engorged by the rush of blood into the thoracic cavity. This condition of affairs has been greatly intensified by the use of the leather jacket, or the shoulder and arm girdle, now used in the "tug of war." The sudden rush of blood from the brain as well as the muscles occasion the frequent exhibition of fainting now so commonly seen after a hard contest at this sport.

The next group of exercises that are likely to occasion the most heart disturbance are very rapid movements, long continued, where many muscles are brought into successive action though little weight is used, by the arms, as in violent boxing contests. Here the nervous tension and the state of constant expectancy on the part of the brain and muscles, in addition to the real work done, are very exhausting to the heart. The next exercises in the order of severity on the cardiac muscle and the circulation, are the one-fourth and one-half mile runs, short swimming contests at full speed, high jumping, and three-mile boat races.

It is estimated that a person weighing 158 pounds, who jumps six feet four inches high, expends enough force to raise 1000 pounds one foot from the ground. I hardly think this can be a fact, as the position of the center of gravity of the body, when starting from the ground and clearing an object of this height, must modify somewhat the actual number of foot-pounds lifted; nevertheless, the enormous energy expended, and the suddenness of the act, are a great strain on the heart and blood vessels.

The one-fourth and one-half mile runs are especially trying to the heart on account of the large number of muscles brought into action and the length of stride and rapidity of pace maintained by modern runners. Football, wrestling, weight-throwing, the two-mile bicycle and walking contests, four-mile boat-racing, the one-mile, and even the three-mile, running races are not so severe on the heart as the exercises I have mentioned. Running and walking are natural forms of exercise, and the alternate movements of the arms and legs, when not too rapid, tend to facilitate the circulation of the blood. The physical efforts in football, wrestling, and weight-throwing are very severe at times, but not continuous, and the intervals of rest allow the heart time to recover from its embarrassment. In long-distance boat-racing the strokes are slow and rhythmical, seldom continuing above thirty-eight a minute for any length of time, and, as in running, the alternate contraction and relaxing of the muscles of the arms and legs tend to facilitate the circulation. The use of the sliding-seat has brought more muscles into action and thus increased the total amount of strength and energy expended, but it has enabled the oarsman to maintain a better position of the thorax and thus ease the work of the heart and lungs. The effect of these exercises varies with different men under different conditions and circumstances. What some of these modifying conditions and circumstances are, I shall consider under the head of precautions to be observed in practicing athletics.

Now let us inquire how large a per cent. of athletes are injured in taking these so-called violent exercises. During my

professional career I have examined over ten thousand men of different ages from all classes and conditions of life. Of this number over one thousand were athletes, professional and amateur, who had engaged for several years, and attained some prominence, in such severe physical exercises as rowing, running, boxing, swimming, jumping, wrestling, football, weight-throwing, fencing, and walking contests. Out of this number of athletes I have not found over one per cent. affected with the slightest cardiac disturbance, and in only two of these cases did I feel positive that the trouble was due to athletics alone.

At Harvard University all of the students have to pass a physical examination and give a test of their ability before they can enter any athletic contests as members of the college teams. This stringent measure on the part of the authorities undoubtedly accounts for the small number of accepted athletes who show any cardiac weakness. It may perhaps be said that some of those who injure themselves, quietly withdraw from athletic contests and seek the advice of their family physician; and undoubtedly there are a few who do not come up for re-examination for fear of being rejected. Then again it may be said that the majority of athletes are between twenty and thirty years of age, and the injury that they do themselves may not show itself until later in life. But all the evidence we have covering the lives of old athletes is that given by Dr. Morgan in his book entitled *University Oars.*[2] Inquiries concerning the condition of the 294 oarsmen who rowed on the Oxford and Cambridge crews between the years 1829 and 1869 brought out the facts that 39 were dead; of those living 115 expressed themselves as benefited by their exertion, 162 said they were in no way injured, while 17 referred to themselves as injured by their vigorous training. Of the 39 deaths, 23 per cent. were ascribed to chest affections and 7.4 per cent. to cardiac disorders. This shows the mortality from chest diseases among the oarsmen to be about 15 per cent. less than the number of deaths from the same

[2] Dr. E. H. Bradford, of Boston, a few years later arrived at similar conclusions regarding Harvard oarsmen.

causes among the general male population between the ages of twenty and sixty. The deaths among the oarsmen from heart affections, however, was a little in excess of that of the general population from the same disorders. This slightly unfavorable showing may have been due to the small number of observations, or to the fact that the oarsmen may have acquired their cardiac trouble long after they ceased rowing. The absence of all data as to the condition of these men before and after their college training renders any conclusions futile as to the local and constitutional effects of rowing, except in a negative way.

It seems to me reasonable to admit that athletes are endowed by nature with a stronger heart and lungs and a better organism throughout than are possessed by most mortals. The exercises in which they excel are the ones that we prescribe for those persons whose heart and muscles we wish to strengthen and invigorate. Does not the work done or the feat accomplished presuppose an organism equal to it? This is my conviction, and I have yet to learn of a single case where a sound heart in a sound organism has been injured from the practice of athletic exercises under proper conditions and capable supervision. The practice of physical exercises does not insure a man against death, and the fact of one having died from heart disease or consumption who had formerly engaged in athletic pursuits is not proof positive that the exercises caused his death, any more than many other things that may have occupied his attention during life.

Before any person can make an authoritative statement as to the effect of athletics upon any individual, he must know his condition previous to the time of his beginning to practice. When this is done in a number of cases it will be found that the practice of athletics pure and simple rather lessens than increases one's chances of acquiring either heart or lung trouble. This brings me to a consideration of the condition of many men who aspire to be athletes, and who often enter athletic contests.

The great prominence given to athletics at the present day

by the press and public stimulates a great many men to take exercise who would never do it from a sense of duty or as a means of development. The physical condition of these men represents very fairly the average physical condition of the masses. When it is considered that the average age at death is only about thirty-three years, that nearly 40 per cent. of the total number of deaths result from some form of lung or heart disease, and that the great majority of these cases are constitutionally weak in these organs—it will be seen that the average man is not likely to possess the vital material out of which athletes are made. I am informed that over 50 per cent. of the men who apply for admission to the army and navy, and to the police force of two of our large cities, are rejected on the ground of physical incompetency. And yet men of much less physical stamina think they are qualified to enter athletic contests. The great mass of these aspirants for athletic honors are weeded out in the preliminary struggles with their companions or play-fellows. Those that are successful in these local encounters are spurred on by admiring comrades or club-mates to greater efforts. They become fired with an ambition to break a record, win a prize, or gain distinction at any hazard, and they begin to train.

I shall not at this time undertake to describe the course of training as it is pursued by the larger portion of these young aspirants; let it suffice to say that it begins and ends with a continuous series of trials and tests in which one part of the organism is forced into competition with another, until finally the weaker part gives way, and the efficiency of the individual for any more great efforts has been permanently impaired. These are the men who bring athletics into bad repute. If they had been subjected to a physical examination, they would have been advised not to compete in violent exercises, and the pulmonary, cardiac, or constitutional weakness then discovered would have been traced to its true cause, and not attributed later to excesses in athletics. Back of most of the cardiac disturbances which are ascribed to over-exertion in sport will be found an early history of rheumatism, scarlet-

fever, degenerative trouble of the kidneys, or the lingering effects of some other disease. Dissipation in early life, excessive use of alcohol and tobacco, vitiated air, poor food, sedentary employment, want of regular exercise, tight clothing, cramped positions, over-study, loss of sleep and too rapid growth—all these tend to weaken and derange the heart's action and impair its ability for great efforts. Among college students the great majority fail to come up to the athletic standard because they have never had any systematic exercise or physical training. Most of them have devoted the period in which the greatest growth and development usually take place to study in preparation for college. Consequently they enter trained in mind, but not in body, for the ordeals of college life. The pitiful wail of the captain of the crew or the captain of the "eleven" for "better men," is not all a myth, but represents a serious want of stamina and brawn in our national physique. Probably the finest appearing young men physically of any class in the United States may be found in our colleges and higher institutions of learning, and yet the average physical condition of these young men is far from gratifying. The flat chest and drooping head are still the rule and not the exception. While the hollow backs, emaciated limbs, flabby muscles, and feeble circulations are sufficiently numerous to refute any criticism that physical training in our schools and colleges is being carried to excess.

Most of these young men come from fine families, with a good inheritance, and are well nurtured, but their body-building has been neglected, and they come to college poorly developed physically. Many of this class try for positions on the athletic teams. Not a few are rejected by the physical examiner because they are not in a condition to endure the strain of an athletic contest. They are not diseased, but simply lack good physical tone, and need time and less trying exercises at first to properly prepare them for the arduous efforts of a football or rowing season. If these men are not pushed too hard at first, but are allowed to mature slowly, they often make the finest athletes before the completion of

the college course. If, on the other hand, they plunge in at once, they are likely to be used up in the preliminary practice, or to soon find the pace "too fast" or the work "too hard," and to be forced to give way to more vigorous and hardy competitors.

Another class of college men whom I have known to be injured by athletic contests, is composed of those who have overworked both mentally and physically while preparing for college or during their college course. Some of these men inherit good constitutions but poor fortunes, and in their efforts to get an education they have often worked with their muscles during the day and with their brains at night. Others, in hopes to save time and expense, have cut short their hours of sleep and reduced the quality and quantity of their food. Both classes have burned the candle at both ends and have taken something from their stock of vitality that has never been returned. Still another class have been ambitious to stand well in their studies, be social leaders, and excel in athletics at the same time, while a few have engaged in teaching private pupils, or in tutoring as it is termed, in addition to their athletics and regular college studies. Some men are so well constituted that they can stand this double strain for a while, but sooner or later they give way, and—if they happen to be prominent in athletics—athletics alone are too often made responsible for their breakdown.

Admitting that the general practice of athletics by all classes under the present highly competitive system is likely to result in injury to some, let us consider briefly a few of the precautions that are necessary to observe in order to reduce the risk to a minimum. The young man who aspires to be an athlete, should have himself examined and tested by a good physician before beginning to practice athletics, and get his written opinion as to the advisability of entering athletic contests. I say *written opinion*, because I have learned from experience that some physicians are very free with their spoken opinions where they are not expected to assume any responsibility. The best adviser is likely to be the young man's family physician, for

he will be familiar with his history, and constitutional peculiarities. Second, it is best not to engage in violent exercise until one is at least eighteen years of age, and in most cases it would be better for him to postpone his athletic attempts until he is twenty. The heart and lungs do not get their full development until after this age, and if forced in their work before this time, they will be likely to be impaired in their later efficiency and to retard the final development of the whole body. The tables prepared by Drs. Beneké[3] and Boyd[4] on this subject should be in the hands of every practicing physician and schoolmaster, for it is in the preparatory schools, that are now fostering highly competitive exercises among growing boys and not physical training in its best sense, that the evils following over-exertion are most likely to occur.

A third source of cardiac disturbance, in connection with exercise, is the wearing of tight clothing. In an article on "The Physical Training of Women" by the writer, published in *Scribner's Magazine*, February, 1889, it was shown that the average heart-impulse before and after the same exercise with and without corsets was increased eight beats a minute by contracting the waist from twenty-five to twenty-four inches. A great deal of the heart trouble experienced by young soldiers can be traced to the physical exertion made while wearing the "regulation uniform," and the exhibitions of complete prostration from the practice of football, so often seen early in the season, would not be so frequent if the jackets were loosened to make room for the increased expansion of the chest and respiratory organs.

Fourth, the strain on the heart and blood vessels is greatly relieved in violent exercises, through getting into a profuse perspiration. The great test of condition is ability to do a good athletic performance on a cold, rainy, or windy day. Many a man has broken down under these conditions who

[3] Beneké, *Ueber das Volumen des Herzen und die Weite der Arteria in den verschiedenen Lebensaltern*, 1879.

[4] *Weight of Internal Organs*, by Dr. Boyd. Royal Society *Transactions*, February 28, 1861.

could have stood the same amount of muscular work on a warm day, It is always advisable, therefore, to get the blood freely circulating, and to be thoroughly warmed throughout from exercise or rubbing, before making any effort that is to test the heart and lungs severely.

Fifth, the habit which some athletes have of eating and drinking before a contest to give them strength and staying power, as they term it, cannot be defended on good physiological grounds. No food can be absorbed into the system inside of thirty minutes, and most foods require three and four hours for digestion. The only purpose that eating can serve is to allay nervous excitement in certain individuals. The slightest fullness or distention of the stomach, on the other hand, interferes with the action of the heart and lungs, and, by imposing extra work upon them, renders the exercise more fatiguing. A person should not undertake to make his greatest physical effort within three hours after a meal, and that meal should not be a very hearty one.

Sixth, the question is often asked as to the advisability of a person's taking a cold bath when very warm from exercise. A vigorous athletic fellow, however warm, can usually take a cold bath with impunity, unless he is tired. As he is most likely to be tired after coming in from the football field, a hard row on the river, or a long siege at tennis, a cold bath at such a time—whether a shower, tub, or plunge—is, in my opinion, not safe for the average athlete, to say nothing of the average man. The shock to the system that follows this practice is fully as exhausting as prolonging the practice of the violent exercise would have been. I have seen more symptoms of temporary cardiac failure following cold bathing after severe exercise than from any other cause. The question has often occurred to me whether our young men do not lose by excessive bathing and the profuse use of strong alkaline soaps, something which the ancients preserved by their practices of oiling and anointing.

Seventh, it is a matter of common observation that persons not accustomed to exercise cannot take the simplest run or

row without getting greatly "out of breath," as it is termed. The difference in the heart's action is sometimes as much as thirty beats to the minute for the same amount of physical work in the same person when not accustomed to exercise and when in good training. This plainly shows how much careful preparation has to do with relieving the distress so often experienced by beginners at any arduous exercise.

It is a want of good physical tone on the part of the great majority of persons that makes them look with so much compassion on, and often condemn so bitterly, the vigorous and dashing sport of a trained athlete. One should not judge the effect of athletics from the standpoint of a semi-invalid.

In my opinion the grand possibilities opened up to the human race, both mentally and physically, by the achievements of men in splendid physical condition, should furnish a source of inspiration to us all. Although the trained athlete can greatly excel the average man in any exhibition of power and endurance, still it must be borne in mind that there is a limit to human capability, and this limit is determined ultimately by the power of the heart, though the condition of all the other organs is correlated. Every pound of energy expended in work, either of mind or body, must be made good by food, rest, and sleep. Hence the fundamental requisites of a man of power are to be a good eater and a good sleeper. The importance of these acquirements to Americans is not well enough understood. Plato tells us that the athletes of ancient Greece were a stupid set of fellows, lounging away their time in eating and sleeping, and yet, if their monuments are correct, they have left us a set of athletic records that have never been equaled. It has never seemed to occur to us that occasional sluggishness or frequent intervals of total inactivity are essential requisites for great trials of speed, strength, or endurance. One of the most energetic men whom it is my pleasure to know, undresses and goes to bed for an hour in the middle of the day, and no one is allowed to arouse him from his slumber until the hour has expired; and yet this same man turns off more work than two ordinary men,

though he takes time for exercise, and never misses an engagement.

The profound stupor that frequently comes over a hard-worked athlete, as he sits bolt upright and tries conscientiously to get out his mental task, will not be likely to secure for him honorable mention in any of his studies, but it will certainly insure him from nervous exhaustion or a general physical breakdown. As I have previously intimated in this article, it is not athletics alone that are likely to injure our young men, but athletics plus dissipation in some cases, plus mental over-application in others. It is not over-study alone in our schools that causes so much feebleness in health, but too much study plus too much society and too enervating amusements. So it is in business; it is not the hard work of the day alone that is increasing the amount of heart and nervous disease in our large cities; it is the work of the day plus the work of the night, that burns the candle at both ends and proves so speedily exhausting.

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V.

DISCUSSIONS.

THE SEVEN LIBERAL ARTS.

The Greeks originally recognized two branches of liberal education[1] (1) Gymnastics, for the body, and (2) Music, for the soul. Out of music grew, in process of time, not only the so-called Liberal Arts, that is, the arts that go to constitute the education of every freeman, but also what was regarded as a superfluous luxury (*περιττή*), Philosophy. It is the purpose of this paper to trace, as far as possible, this gradual development.

In doing so, one must bear in mind that originally the term "Music" covered, not only what we call music, but also poetry, and that poetry was the vehicle of all the science that then was. The Homeric *aoidos* knows the "works of gods and men." Strictly speaking, therefore, it was out of music and poetry that all the arts and sciences grew. The first step in this direction was taken when Letters were introduced, that is, about the first Olympiad.[2] But it was long before Letters were regarded as a separate branch of education; they were simply a means of recording poetry. Even as late as the time of Plato, Letters are still usually included under Music. In Aristotle, they are recognized as a separate branch. It follows from this that, when we find Greek writers confining soul-education to Music, or Music and Letters, we must not conclude that these signify only playing and singing, reading and writing. Socrates was saying nothing new or paradoxical, when he affirmed that Philosophy was the "highest music." The Pythagoreans had said the same thing before him, and there can be no doubt that Pythagoras himself included under Music (1) Letters, (2) Arithmetic, (3) Geometry, (4) Astronomy, (5) Music, in our sense, and (6) Philosophy (a term invented by him). Plato did the same thing. He speaks of "the true

[1] It must be borne in mind that the Greek *τέχνη*, art, corresponds almost exactly to what we mean by "science." It is defined by Aristotle, *Metaph.*, A. 1.; 981 a 5 sqq. Schwegler, in his translation of the *Metaphysics*, renders it by *Wissenschaft*. *Ἐπιστήμη* is our "philosophy."

[2] See Jebb, *Homer*, pp. 110 sqq.

Muse that is accompanied with truth (λόγων) and philosophy." But in his time "Music" was used in two senses, a broad one, in which it included the whole of intellectual education, and a narrow one, in which it is confined to music in the modern sense. It is in this latter sense that it is used by Aristotle, when he makes the intellectual branches of school education (1) Letters, (2) Music, and (3) Drawing. Philosophy he places in a higher grade. Having distinguished Letters from Music, it is natural enough that he should assign to the former the branches which Pythagoras had included under the latter. His literary scheme appears to be (1) Grammar, (2) Rhetoric, (3) Dialectic, (4) Arithmetic, (5) Geometry, (6) Astronomy. Add Music, and we have exactly the Seven Liberal Arts; but, as Drawing must also be added, it is clear that there was, as yet, no thought of fixing definitely the number seven. That Drawing was for a long time part of the school curriculum is rendered clear by a passage in a work of Teles (B. C. 260) quoted by Stobæus (xcviii., 72), in which it is said that boys study (1) Letters, (2) Music, (3) Drawing; young men, (4) Arithmetic and (5) Geometry. The last two branches are here already distinguished from Letters; but we cannot be sure that the list is intended to be exhaustive. What is especially noticeable in the list of Teles is, that it draws a clear distinction between the lower and higher studies, a distinction which foreshadows the *Trivium* and *Quadrivium* of later times.[3]

Philosophy, or the highest education, Aristotle divided into (1) Theory and (2) Practice. Theory he subdivided into (a) Theology, First Philosophy, or Wisdom, called later Metaphysics, the science of the Unchangeable, and (b) Physics, the science of the Changeable; Practice into (a) Ethics, including Politics and Œconomics, and (b) Poetics or Æsthetics.

After Teles we hear little of the Greek school curricu-

[3] It is a pity that we cannot fix the date of the so-called *Picture* of Cebes (Κέβητος Πίναξ). In this we find enumerated the votaries of False Learning, (1) Poets, (2) Rhetoricians, (3) Dialecticians, (4) Musicians, (5) Arithmeticians, (6) Geometricians, (7) Astrologers (if we count Poets=Grammarians, we have exactly the Seven Liberal Arts), (8) Hedonists, (9) Peripatetics, (10) Critics, "and such others as are like to these." The "Hedonists" (ἡδονικοί) are the Cyrenaics; the "Critics" (κριτικοί) can hardly be the grammarians, though that is usually the meaning of the term in later times. Should we not read κυνικοί? The *Pinax* can hardly be later than 250 B. C.

lum until about the Christian era. Meanwhile, the Romans, having acquired a smattering of Greek learning, began to draw up a scheme of studies suitable for themselves. It is noticeable that in this scheme there is no such distinction as the Greeks drew between liberal (*ἐλευθέριαι, ἐγκύκλιοι, λογικαί*) and illiberal (*βάνανσοι*) arts.[4] As early as the first half of the second century B. C., Cato the Censor wrote a series of manuals for his son on (1) Ethics, (2) Rhetoric, (3) Medicine, (4) Military Science, (5) Farming, (6) Law. It is very significant that the only Greek school-study which appears here is Rhetoric; this the Romans, and notably Cato himself, always studied with great care for practical purposes. It seems that Cato, in order to resist the inroads of Greek education and manners, which he felt to be demoralizing, tried to draw up a characteristically Roman curriculum. Greece, however, in a great measure prevailed, and half a century later we find Varro writing upon most of the subjects in the Greek curriculum: Grammar, Rhetoric, Dialectic, Arithmetic, Geometry, Astronomy, Music, Philosophy, besides many others. He wrote a treatise in nine books, called *Disciplinarum Libri.* Ritschl, in his *Quæstiones Varronianæ*[5] tried to show that these "disciplinæ" were the Seven Liberal Arts, *plus* Architecture and Medicine, and Mommsen, in his *Roman History*, has followed him; but Ritschl himself later changed his opinion. There seems no doubt that (1) Grammar, (2) Rhetoric, (3) Dialectic (4) Music, (5) Geometry, and (6) Architecture were treated in the work: what the rest were, we can only guess.[6] There is no ground for the assertion that the Seven Liberal Arts were obtained by dropping Architecture and Medicine from Varro's list. It must have been about the time of Varro, if not earlier, that Roman education came to be divided into three grades, called respectively (1) Grammar, (2) Rhetoric, and (3) Philosophy, the last falling to the lot of but few persons. Of course "Grammar" now came to have a very extensive meaning, as we can see from the definition of it given by Dionysius Thrax, in his grammar, prepared apparently for Roman use (B. C. 90). In the Scholia to that work (I am unable to fix their date), we find the Liberal Arts enumerated as (1) Astron-

[4] "Liberal" means fit, "illiberal" unfit, for freemen. The sum of the liberal arts was called Ἐγκυκλιοπαιδεία, which we have corrupted into *Encyclopædia.*

[5] Bonn, 1845.

[6] See Boissier, *Étude sur la Vie et les Ouvrages de M. T. Varron*, pp. 332.

omy, (2) Geometry, (3) Music, (4) Philosophy, (5) Medicine, (6) Grammar, (7) Rhetoric.[1]

But to return to the Greeks. In the works of Philo Judæus, a contemporary of Jesus, we find the encyclic arts frequently referred to, and distinguished from philosophy. The former, he says, are represented by the Egyptian slave Hagar, the latter by Sarah, the lawful wife. One must associate with the arts before he can find philosophy fruitful. In no one passage does Philo give a list of the encyclic arts. In one place we find enumerated (1) Grammar, (2) Geometry, (3) Music, (4) Rhetoric (*De Cherub.*, § 30); in another (1) Grammar, (2) Geometry, (3) "the entire music of encyclic instruction" (*De Agricult.*, § 4); in another (1) Grammar, (2) Music, (3) Geometry, (4) Rhetoric, (5) Dialectic (*De Congressu Quær. Erud. Grat.*, § 5); in another, (1) Grammar, (2) Arithmetic, (3) Geometry, (4) Music, (5) Rhetoric (*De Somniis*, § 35), etc. It would seem that the encyclic arts, according to Philo, were (1) Grammar, (2) Rhetoric, (3) Dialectic, (4) Arithmetic, (5) Geometry, (6) Music. Astronomy appears in none of the lists. Philosophy is divided into (1) Physics, (2) Logic, (3) Ethics (*De Mutat. Nom.*, § 10), a division that was long current.

From what has been adduced I think we may fairly conclude that at the Christian era no definite number had been fixed for the liberal arts either at Athens, Alexandria, or Rome. The list apparently differed in different places. Clearly the Roman programme was quite different from the Greek. Shortly after this era we find Seneca (who died A. D. 65) giving the liberal arts, *liberalia studia*, as (1) Grammar, (2) Music, (3) Geometry, (4) Arithmetic, (5) Astronomy, (*Epist.*, 88). He divides Philosophy into (1) Moral, (2) Natural, (3) Rational, and the last he subdivides into (a) Dialectic and (b) Rhetoric. Above all he places Wisdom, "*Sapientia perfectum bonum est mentis humanæ*" (*Epist.*, 89). Here we see that two of the Seven Liberal Arts are classed under Philosophy. A little later, Quintilian divides all education into (1) Grammar, and (2) Rhetoric, but condescends to allow his young orator to study a little Music, Geometry, and Astronomy.

Turning to the Greeks, we find Sextus Empiricus, who seems to have flourished in Athens and Alexandria toward the end of the second century, writing a great work against the dogmatists

[1] See Bekker's *Anecdota Græca*, ii., 655.

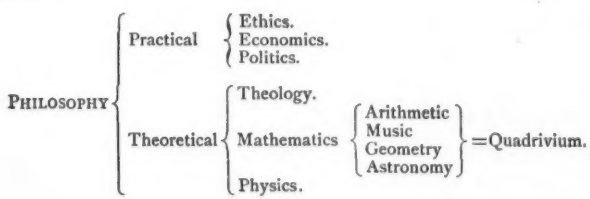
or "mathematicians," of whom he finds nine classes, corresponding to six arts and three sciences of philosophy. The arts are (1) Grammar, (2) Rhetoric, (3) Geometry, (4) Arithmetic, (5) Astronomy, (6) Music: the sciences, (1) Logic, (2) Physics, (3) Ethics. We are now not far from the Seven Liberal Arts; still we have not reached them.

There is not, I think, any noteworthy list of the liberal arts to be found in any ancient author after Sextus, till we come to St. Augustine. In his *Retractiones*, written about 425, he tells us (I. 6) that in his youth he undertook to write *Disciplinarum Libri* (the exact title of Varro's work!), that he finished the book on (1) Grammar, wrote six volumes on (2) Music, and made a beginning with *other five* disciplines, (3) Dialectic, (4) Rhetoric, (5) Geometry, (6) Arithmetic, (7) Philosophy. It has frequently been assumed that we have here, for the first time, the Seven Liberal Arts definitely fixed; but there is nothing whatever in the passage to justify this assumption. The author does not say "*the* other five disciplines," but merely "other five." Among these five, moreover, is named Philosophy, which, though certainly a "discipline," was never, so far as I can discover, called an art, liberal or otherwise. There is not the smallest reason for tracing back the Seven Liberal Arts to St. Augustine, who surely was incapable of any such playing with numbers. He does not, indeed, recognize the "Seven."

It is in the fantastic and superficial work of Martianus Capella, a heathen contemporary of Augustine's, that they first make their appearance, and even then no stress is laid upon their number. They are (1) Grammar, (2) Dialectic, (3) Rhetoric, (4) Geometry, (5) Arithmetic, (6) Astronomy, (7) Music. These, no doubt, were the branches taught in the better schools of the Roman Empire in the fourth and fifth centuries, when, on the whole, the Greek liberal curriculum had conquered the Roman rhetorical one. There is not the slightest ground for supposing that Capella had anything to do with fixing the curriculum which he celebrates. His work is a wretched production, sufficiently characterized by its title, *The Wedding of Mercury and Philology*. He wrote about seven arts because he found seven to write about. Attention was first called to the *number* of the arts, and a mystical meaning attached to it by the Christian Senator, Cassiodorus (480–575) in his *De Artibus et Disciplinis Liberalium Litterarum*. He finds it written in Prov. IX. 1, that "Wisdom hath builded

her house. She hath hewn out her seven pillars." He concludes that the Seven Liberal Arts are the seven pillars of the house of Wisdom. They correspond also to the days of the week, which are also seven. It is to be observed that he distinguishes the "Arts" from the "Disciplines," or, as they said later, the *Trivium* from the *Quadrivium*. The pious notion of Cassiodorus was worked out by Isidore of Seville (died 636) in his *Etymologiæ*, and by Alcuin (died 804) in his *Grammatica*. Of course, as soon as the number of the arts came to be regarded as fixed by Scripture authority, it became as familiar a fact as the number of the planets or of the days of the week, or indeed, as the number of the elements. About A. D. 820, Hrabanus Maurus (776–856), a pupil of Alcuin's, wrote a work, *De Clericorum Institutione*, in which the phrase *Septem Liberales Artes* is said to occur for the first time. About the same date Theodulfus wrote his allegorical poem *De Septem Liberalibus in quadam Pictura Descriptis*.[8]

The Liberal Studies after St. Augustine did not include Philosophy, which rested upon the Seven Arts, as upon "seven pillars," and was usually divided into (1) Physical, (2) Logical, (3) Ethical.[9] After a time Philosophy came to be an all-embracing term. In a commentary on the *Timæus* of Plato, assigned by Cousin to the twelfth century, we find the following scheme:



The author expressly says that "Mathematica quadrivium continet"; but he plainly does not include the *Trivium* under Philosophy. This, however, was done in the following cen-

[8] I am indebted for a number of these facts to an article by Prof. A. F. West, in the *Princeton College Bulletin*, November, 1890.

[9] These terms, which we still find in Isidore and Hrabanus Maurus, are afterwards, in the thirteenth century, replaced by their Latin equivalents: Natural, Rational, and Moral. In the case of the second, this caused considerable confusion, inasmuch as when it ceased to be used as "rational," it took the place of "dialectic."

tury. In the *Itinerarium Mentis in Deum* of St. Bonaventura (1221–74) we find the following arrangements:

PHILOSOPHY	Natural	Metaphysics—essence: leads to First Principle=Father.
		Mathematics—numbers, figures: leads to Image=Son.
		Physics—natures, powers, diffusions: leads to Gift of Holy Spirit.
	Rational	Grammar—power of expression=Father.
		Logic—perspicuity in argument=Son.
		Rhetoric—skill in persuading=Holy Spirit.
	Moral	Monastics—innascibility of Father.
		Œconomics—familiarity of Son.
		Politics—liberality of Holy Spirit.

Here we have the *Trivium*, under the division "Rational," while the *Quadrivium* must still be included under "Mathematics." In both cases we get nine sciences or disciplines, and the number was apparently chosen, because it is the square of three, the number of the Holy Trinity. In the latter case this was certainly true. Speaking of the primary divisions of Philosophy, the Saint says: "The first treats of the cause of being, and therefore leads to the Power of the Father; the second of the ground of understanding, and therefore leads to the Wisdom of the Word; the third to the order of living, and therefore leads to the goodness of the Holy Spirit."

Dante in his *Convivio* (II, 14, 15) gives the following scheme based upon the "ten heavens," nine of which are moved by angels or intelligences, while the last rests in God.

LIBERAL ARTS	Trivium	Grammar	Moon	Angels.
		Dialectic	Mercury	Archangels.
		Rhetoric	Venus	Thrones.
	Quadrivium	Arithmetic	Sun	Dominions.
		Music	Mars	Virtues.
		Geometry	Jupiter	Principalities.
		Astrology	Saturn	Powers.
PHILOSOPHY		Physics and Metaphysics	Starry Heaven	Cherubim.
		Moral Science	Crystalline Heaven	Seraphim.[10]
		Theology	Empyrean	God.

In Dante are summed up the ancient and mediæval systems of education.

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[10] In the XXVIIIth Canto of the Paradise, these angelic powers are arranged somewhat differently, in deference to Dionysius Areopagita and St. Bernard.

OBJECTIVE METHODS OF TEACHING ELEMENTARY READING.

Inspector Hughes has given us a very comprehensive discussion of the principles of reading,[1] and by so doing, has laid the basis of further discussion. His conclusions are (1) It is unpedagogical to use objects in teaching reading; (2) That oral language, which a child has already learned, is fully sufficient to bring about those acts of association necessary for the functioning of a word. The arguments by which he seeks to prove these propositions may be easily referred to, and need not be repeated here. It is proposed to examine the evidence which Inspector Hughes presents.

1. Although oral and printed language are two integers or factors in the same language, every printed word, not recognized by a child, is absolutely NEW to the child.

2. An oral word, and its corresponding printed word, cannot be called IDENTICAL, for they are two entirely distinct causes of the same conscious effect.

3. The statement that no new thought can be presented by printed language may be fairly questioned. The words of a sentence certainly may bring into a child's mind a new thought. This no one will question. Mr. Hughes' point is that such sentences should never be used in teaching a child to read. Mr. Hughes says "It will also be necessary to explain to him the meaning and use of some of the words in his reading lesson." Explaining the meaning and use, means nothing more nor less than the awakening of those conscious activities which the words are designed to recall. Every reader of a language is constantly finding new words which he does not recognize. He immediately seeks from the dictionary or other sources the meaning of the word, that is, the recognition of the word depends upon the conscious activities which must be aroused before the word performs its function. Such words are certainly new to the learner, and the conceptions which they recall may also be new. For instance, I see the words *ornythorhynchus platypus;* I look in an illustrated dictionary, and the picture of the animal arouses a new conception. The plain inference from Mr. Hughes' premises is that pictures should never be used in teaching reading. A person passes

[1] EDUCATIONAL REVIEW, II, 162–168.

through a menagerie and sees an unfamiliar animal and immediately looks at the name, then seeks to pronounce the name. In this case, the new conception, the printed word follows, and then the oral word. This is a common experience and is certainly not unpedagogical.

4. The proposition that oral language is natural and printed language is artificial, cannot be admitted without further investigation. Inspector Hughes should show the technical differences between natural and artificial, in these two cases, which, according to his statement, form an identical language. Every oral word was invented by man and is made by the use of the vocal organs. So far as the invention is concerned, the same can be said of the printed language, there being a difference of course in the means of expression. The question remains, what is the essential difference between natural and artificial; that is, between the oral word and the printed word? With speaking children, the oral language precedes the written language, but that does not prove that the oral word is natural, *i. e.*, not made by man, and that the written word is artificial, *i. e.*, made by man.

5. The statement that little children, not deaf, have no direct training in learning to hear language, may surprise many mothers who have followed their little ones from the time the spoken word is recognized or heard until the child is master of the main idioms of the language. Certainly teaching a child to hear language and to talk is of absorbing interest to every parent. In what sense it may be said that a child has no "direct training," in learning to hear language, certainly needs further explanation. If I am not very much mistaken, I have often heard a mother say "doll," "dog," "cat," "mamma" and "papa" repeatedly, while her children were absorbed with conscious effects corresponding to these objects.

Yet the lack of conscious effort in learning oral language, and the conscious process of learning visible language, may be accounted for by the difference in the methods, and we may learn, some day, that the mother's method, by which the child learns oral words unconsciously, is to be preferred to all other methods; that is, there may be a method yet to be discovered, by which a child will learn written words without conscious effort.

6. Inspector Hughes seems to confound expression with

the process of hearing and reading. In hearing language, and also in reading, the words recall the thought, that is, the words in both cases precede the idea. Talking or speaking is the expression of thought; its correspondence, hearing language, is thinking by means of oral words. Writing is the expression of thought; reading, its correspondence, is thinking by means of printed words, and in scientific discussion should be kept entirely separate as two distinct processes.

His further statement that "the teacher's first aim should be to make word-recognition automatic," may be granted if word-recognition means that the printed word arouses, on presentation, the appropriate conscious activities which the word was designed to recall; but the problem of the most economical way to bring about word-recognition, so far as Mr. Hughes' discussion is concerned, still remains an open question.

The proposition that the oral word is an actual necessity in learning the printed word, may be met by the well-known fact that deaf children learn to read visible language as easily as those children who have full use of their organs of hearing. Inspector Hughes has not shown us clearly why it is unpedagogical, or why it is opposed to psychological laws, to present objects when a word is being taught, in order to arouse in consciousness the conscious activities which a printed word is designed to recall.

Pictures have been used to teach printed words since the time of Comenius, and perhaps much earlier. The direct inference of the argument presented is that pictures should never be used for this purpose. If pictures are of pedagogical use in teaching reading, then certainly objects are of the same use. If the dictionary is to be used in finding the meaning of a word, a shorter and more direct way, with little children, is found by showing the object which brings into consciousness the meaning of the word.

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PRACTICE TEACHING IN NORMAL SCHOOLS.—III.

While there will never be wanting individuals who like to speak of teaching as a science, and to claim for its processes and their results a high degree of precision and ripeness, it is

generally conceded that such a claim is premature and that nothing is gained practically by the attempt to force into the discussion of educational questions much in the way of scientific axioms and terminology. Among candid teachers there is a general willingness to let their art stand upon about the same footing as the practice of medicine and the arts of war and of navigation, wherein even the largest and most accurate knowledge must be supplemented at every step by skill and address that come only by experience. Even in the domain of the more obvious physical laws, our widest learning is as yet far enough from anything like mastery of their extent and relations. It is said of the late Professor Parker Cleveland, a man imbued with the genuine scientific spirit, if ever there was one, that when he came to the climax of an experiment before his class, he would pause and say with impressive humility, "Now, if we have complied with all the conditions, we may expect, etc., etc." If such modesty and caution are becoming in one who is dealing only with the orderly and familiar phases of external nature, there would seem to be little excuse for assurance and loftiness when we have to do with the complexities and anomalies of the human being, especially when it is remembered that the teacher as well as the pupil is human.

In any undertaking where the results to be brought about depend upon manifold and variable conditions that cannot all be foreseen, making necessary many readjustments of plan and method as the process goes on, it is evident that the training best calculated to develop the qualities that insure success must be of a highly practical character. The work of the teacher is undoubtedly of this sort; and we find, as a matter of fact, that practice, of one kind or another, is made a part of nearly all normal courses, whether long or short. Indeed, the clinic and the hospital are scarcely regarded as more indispensable to the young physician than the practice-school to the normal student.

With some variations, practice-teaching falls under three types: first, the giving of lessons to classmates; second, the giving of lessons to children in practice or model schools; third, teaching as assistants or apprentices in ordinary graded schools. Perhaps the most complete system would be one which should make use of all three of these modes in the order named; but this would take too much time.

Lessons, or rather lesson-forms exhibited to classmates, have value as affording opportunity for logical arrangement of topics and for a certain amount of passing criticism and discussion; but such exercises hardly deserve the name of teaching, in the proper sense of the word, for the subject-matter is generally well known to the class, and there is consequently on their part no learning, on which genuine teaching must, as it were, subsist. A great part of all real instruction is the constant testing of the pupil's mind as the process goes on, to ascertain how far the thing taught is being rightly apprehended, as the sailor when approaching unfamiliar land must take frequent soundings to note the shoaling of the water as he nears the shore. Failure in this is one of the surest marks of deficiency in faculty or in training, and there is really no way of securing it but through actual contact with many different children in many different kinds of lessons. Hence the small advantage of "teaching" those who are the equals of the instructor, and whose minds are therefore in the attitude of criticism rather than that of genuine acquisition. The thing becomes too ridiculous for serious consideration when, as has sometimes been done, the students try to "play children" even to the silly extent of whining and lisping.

Model schools afford the proper material for the pupil-teachers to work upon, but there is a drawback in the fact that the children in such classes tend to become after a while somewhat over-taught, and that too by almost the same methods and illustrations used over and over again. They grow too knowing and lose the *naïveté* of ordinary school children. A sharp little fellow in such a class once tantalized a normal student who was struggling in vain to "develop" a certain point, by saying coolly, "I know the answer you want, but that question won't fetch it." Where the normal class is small in proportion to the size of the model school, this evil is of course lessened. Another defect or limitation of the model school is that it offers so little scope for training the faculty of school management. By its organization the model school is usually under a twofold or threefold oversight, and the common disorders and misbehaviors incident to school life are nipped in the bud, or even in the germ. There are too few of those eddies of mischief which are constantly springing up in remote corners of every schoolroom, and which must be promptly and quietly arrested (as it were with the left hand) without

checking the current and momentum of the work in hand. Tact, which Professor Bain says is "a lively and wakeful sense of whatever is going on," cannot be acquired in a school that has been completely subdued to the uses of the novice and is always ready to kneel for anyone to mount. But for precise and effective drill in giving lessons of the typical sort, model classes offer the best possible opportunity. Everything in the way of material, arrangement, and illustration can be decided upon beforehand with definiteness, and the instruction can go forward with regularity and smoothness, unembarrassed by distracting interruptions, so that one feels the appropriateness of calling such classes model schools.

There are those, however, who think that what are called normal methods may be made too prominent in the consciousness of young teachers and may be pursued with undue zeal and exclusiveness, because, as they believe, the "normal" has been sharpened to too fine a point. It has been made to stand for a single and perfectly definite thing and no other. The nature of a growing mind, they say, is such that it cannot be properly nourished upon a diet which is not only highly concentrated, but is, as it were, chemically pure. The best methods of teaching, it is argued, do not always converge as to a mathematical point, because human activities do not so converge, but may lie parallel or may even take divergent lines. Normal methods, therefore, should not end in an apex, but rather in a plane of sufficient extent to correspond with the variations of human nature that fall within normal limits.

Again, the method must not be held too close to the eye, or it will blot out the end it is intended to serve. Emerson says that "learning depends on the learner"; there is always danger that the normal student will come to feel that it depends on the teacher, and especially on the method. The young sportsman in taking aim looks hard at his gun; experience teaches him to fix his eye on the game instead. The same is true in the process of learning any art. The worst enemies of the tyro in teaching are self-consciousness, pride of method and manner, and morbid fear of making mistakes; and one of the urgent and as yet unsolved problems of normal training is how to overcome these. Surely not by excessive criticism, for, although fault-finding may keep down weeds, it tends to produce sterility by chilling the soil of courageous endeavor.

It may thus be concluded that the practice afforded by model schools, though highly serviceable in several directions and admirably fitted to teach practically a part of the teacher's art, is beset with grave difficulties and dangers.

The third type of practice named was apprenticeship. This requires a larger field, a more complicated adjustment of conditions, and its results are less definite and measurable. Where the normal school is located in a good-sized town, an arrangement can be made with the public-school authorities whereby normal students may be singly assigned as assistants to regular teachers of competent ability and may take part for longer or shorter periods in the instruction and management of real on-going schools such as they will soon have to take charge of themselves. The following conditions should be regarded as indispensable: there must be cordial co-operation on the part of those in authority; the apprentices must serve without pay, and in strict subordination and loyalty to the regular teachers, and for a term long enough in each school or grade to become real assistants; they must be under the constant oversight of the principal or some highly competent assistant of the normal school, and must retain their connection with it as pupils but be excused from its ordinary duties. The apprenticeship should come at a time when the students are well advanced in their normal work, but should not be deferred to the very end of it; a term or two of instruction afterward is useful to digest their experience.

An early lesson taught by this sort of practice is one of the most important and salutary, namely, that the apprentice exists for the school, not the school for the apprentice; and this is enforced with an emphasis not easily forgotten. At the same time there comes prominently into view the personality of the pupils and the expedients necessary to be used in modifying and adapting instruction and management to suit a wide range of individual capacities and needs. This is the very core of the apprenticeship, as it is of the whole art of school-teaching. Perhaps the very first thing given the apprentice to do may be to take a dull or exceptional child who has fallen behind his class, and try to bring him up to grade. She soon discovers that regular lesson-giving is only one among the many duties of a teacher; that the mind of a child is not so simple a thing as she thought it was; that there is in any large body of children a current and movement that

never ceases, and that is therefore not to be stopped but to be directed; that disorder and mischief are more successfully met by diversion than by opposing force; that the lives which children lead out of school often throw the strongest light upon their behavior in school, and must therefore be sedulously inquired into and studied; and finally she may learn that Professor Bain is not far wrong when he says that the teacher "is not everybody." In the meantime, if she had capacity to begin with, she has gained power. Her step, her voice, even the expression of her countenance has taken on a degree of modest dignity and force. She takes the initiative more readily and easily. She listens better and shows less consciousness of self. She tells you of interesting children in her school, and finds the days too short and too few for what she wants to undertake in the way of investigations and experiments.

This is no fancy sketch; it is based strictly upon facts of experience. But, as has been said, in order to get such results a most carefully adjusted plan must be followed and constant vigilance exercised.

The defects of the system are, first, that it plunges the student into too many difficulties at once and is apt to confuse her first efforts; and secondly, that when a degree of success has been reached that may be called passable, it is hard to raise that to an ideal pitch. These are serious drawbacks, but they are believed by those who have had most experience of the system to be more than made up for by many advantages like those above enumerated, which are not to be secured in so great a degree by any other scheme of practice.

It is not unlikely that the difference between apprenticeship and model-school practice corresponds to a real difference of view on the part of teachers of normal schools as to the main object to be sought by practice generally, a difference which may be fundamental and not to be fully reconciled, amounting in fact to two distinct theories of teaching. Perhaps it is the question whether the chief emphasis should be laid upon scope or upon precision. It may be that there are educators who by their mental temperament cannot regard a departure from the most precise and rigid "normal method," as anything less than dangerous heresy tending directly to pedagogical skepticism and perhaps atheism; while, on the other hand, there may be an equally intelligent and conscientious class of teachers who look upon the former as altogether

creed-bound, strait-laced, and narrow. So far as this may be the case, there would seem to be no way but for the two systems of practice to go on side by side, with as much mutual toleration as they can command, and with a final appeal in common to the results of their work.

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CITY SCHOOL SUPERVISION.—III.

Superintendents of schools in years past used to belong to what Agassiz was in the habit of calling, in biology, a "comprehensive type." In recent years this "type" has gradually and slowly differentiated, in highly organized communities, into five distinct species: janitors, schoolhouse agents, purchasing agents, clerks of school boards, and directors of education. In communities of low social organization, and in such as are suffering from "arrested development," these species have not all yet distinctly appeared; while the janitor is fully evolved, the other four species still constitute a sort of sub-comprehensive type, commonly designated by the term "superintendent of schools." Hence it happens that, in communities which are but imperfectly developed this "superintendent of schools," while he must have partly the characteristics belonging to each of the last four species, has usually differentiated somewhat more fully in the direction of some one of them, *i. e.*, he is predominantly either a schoolhouse agent, looking after school buildings, systems of heating and ventilating, etc.; or he is a purchasing agent, buying the books and supplies for the schools, distributing them, and keeping the accounts of the board; or he is a clerk of the board, keeping the records, compiling statistics and writing statistical reports; or he is a person of special training in the science and art of education, and is the pedagogical expert and adviser of the board and the director of the educational work of the schools. It will not be many years, at the present rate of educational progress, until the law of natural selection will have fully developed all these anomalous forms of pedagogic "life" into distinct species, when school boards will no longer pay the salary of an educational expert to a schoolhouse agent or a clerk, simply because he happens to

be called by the generic name "superintendent of schools." It is to be hoped at least, too, that the environments of this rather indefinite office may everywhere be such, in the near future, that the political and the wire-pulling instincts of the "superintendent" may become "rudimentary organs," and that the law of natural selection may develop the pedagogical instinct far more than it has thus far done.

To drop the figure, I think I am safe in saying that school supervision in our best educational centers is rapidly becoming a specialty, and is even becoming recognized as such. The day will soon be past when men of no special training, and men who have never taught a public school in their lives, will be elected to desirable positions as superintendents of schools. I believe, too, that the day is not far distant when such men cannot be elected principals of normal schools. As it is the first business of the lawyer to know law, and of the physician to know medicine, so it will soon be recognized that the first business of the superintendent of schools and of the principal of a normal school is to know that which he is supposed to direct or teach—education. However important it may be for a superintendent of schools to know the world and to know men—more particularly such as are "of the world"—his chief duty is to know pedagogics and be himself an expert in the work which he is to direct. Whatever else he may know, if he does not know this, his usefulness in the future will be extremely limited and his official days may not be lengthened on earth—if he is living in a progressive community.

What then, in short, should be the chief work of the superintendent of schools?

1. He ought to be above all things else a *teacher of pedagogics, a teacher of teachers.* He ought not only to instruct his teachers in the science of education, but he ought to stimulate them to do careful thinking, to put their brains into their work; and he ought to be to them a source of inspiration. Now, no one can arouse thought in others who does not think himself, and no one can "communicate" an enthusiasm to others which he does not have himself. We superintendents are frequently heard to say "As the teacher is so is the school"; it is equally true that as the superintendent is so are the teachers. A live superintendent cannot raise the dead, it is true, but he can bury them and infuse new life into

the living. I believe it was Charles Francis Adams who suggested about ten years ago that the best way to reform schools and teaching was to train expert superintendents. If I may judge by my own failures and by the failures of my brethren—if they will forgive me the repentance that confesses their sins—I am forced to believe that his suggestion was correct.

2. The most effective means of accomplishing this work—of teaching pedagogics—is the teachers' meeting. It cannot be done by giving individual help in the school. The instruction at these meetings ought to cover, at least, educational psychology, the general principles of education, the discussion of the best methods of teaching the various branches of the school curriculum, and a sketch of the history of education. The work at these meetings should not differ materially from that of the department of pedagogics in a college in which such department is well conducted. A superintendent has in fact better facilities for teaching pedagogics effectively than a teacher of pedagogics in a normal school or college. He has mature students, students of experience to whom he can appeal, and the course of study is limited only by his own ability on the one hand and by his tenure of office on the other.

At present expert supervision, in most cities, is secured through special supervisors—supervisors of drawing, of music, of physical culture, of science, of primary schools, of kindergartens, of sewing, and of manual training. If I may judge the feelings of others by my own, I may say that it would be a comfort to the superintendent if the only necessity for these special expert assistants were the fact that he has not sufficient time to do the work himself.

3. The superintendent ought to be the educational adviser of the board, and his counsel ought to command the same respect on their part as that of the city solicitor on a question of law, or that of the city physician on a question of sanitation or the public health. He ought to be held strictly responsible for his advice, just as they are, and for the action of the board based on it. He, and not the school board, ought to be held responsible by the public for the course of study and for the methods of teaching in the schools. If his advice and judgment are found to be untrustworthy, the school board, instead of retaining him and making him simply their clerk

and agent, and assuming the responsibilities themselves which properly belong to him as an expert, ought to dismiss him and secure a person whose judgment they can trust.

4. The superintendent ought also to make it his duty to fashion and shape the educational thought of the community. This he can do through public addresses, through private conferences with thoughtful citizens, and through the daily papers. He ought to make the schools known and popular in the community. In this way he can create the public sentiment which he needs to sustain him at every step he takes in the direction of improving the schools. It is needless to add that in order to do this successfully, he must be a scholar, and must in some measure possess the ability of stating clearly and convincingly his own convictions to others.

5. It is quite true that in many communities the superintendent of schools must take an active interest in the matter of schoolhouse architecture, in the management of the financial affairs of the schools, and in various other matters important to the schools; but he is never justified in allowing his time and strength to be absorbed in these directions to the extent of rendering it impossible for him either to carefully study educational questions or to teach his teachers pedagogics. Nothing can justify ignorance of the law in a lawyer or ignorance of medicine in the physician.

6. What I have thus far said applies especially to our smaller cities and towns. But even in our large cities the only possible substitute for the mechanical courses of study and the other machinery that so embarrassingly hamper good teaching, is competent supervision that will train teachers to use their brains in studying children instead of courses of study to find out what to teach and how to teach it.

7. What has been said applies to all superintendents of teachers' work. In its application to the work of our State superintendents, there is need of considerable modification. The work of these officers is mainly administrative, and they have to deal with educational questions in a general way, especially in their social and economic bearing. They have to study school systems and legislation. A mere educational expert would be apt to take a microscopic instead of a telescopic view of things, and might be a total failure. Executive ability, a knowledge of men and of the ways of reach-

ing them, are of more importance than the expert knowledge of pedagogics for which I have been pleading. The majority of our most successful State superintendents have been men of limited acquaintance with the science of education, but men who could sense the needs of public schools and had the executive ability and tact to secure the legislation that supplies these needs.

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VI.

FOREIGN CORRESPONDENCE.

CONTEMPORARY EDUCATIONAL THOUGHT IN GREAT BRITAIN.

The most important of recent events in the educational history of England is the enactment, in the last session of Parliament, of a measure which renders primary education almost entirely gratuitious. The Free Schools Act, as it is more generally called, received the royal assent on the 5th of August last, after much discussion in both houses of the legislature.

The cause and the effect of this measure cannot easily be estimated by American readers without taking into account one or two previous facts and considerations. The elementary schools of England and Wales, of which, according to the last report, there were 19,498, containing 29,468 separate departments, with a total number of 4,825,560 scholars, have hitherto derived their income from three sources: the imperial grant, the fees paid by parents, and the local contributions. These local contributions are provided in voluntary and denominational schools, by the subscribers; and in Board-Schools by local rates. All the schools alike are visited by the government inspectors, annually examined, and aided by the grant dispensed from the Treasury; the amount of which is determined partly by the number of the scholars and partly by the efficiency of the school as tested by examination. Now, of these three sources of revenue, the government grant is the largest, and has slowly increased of late years, until it has nearly reached one-half of the total income; the children's fees have amounted to nearly one-third of that income, and the local subscription and rates, though larger in the great towns, have in all not much exceeded one-sixth.

The varied and composite character of the school fund is significant of the peculiar growth and history of the English primary-school system. It is not a symmetrical plan of public instruction, predetermined by the foresight of statesmen and theorists, but the result of a series of compromises and experiments. Until 1846, when the central government began to grant public money in support of education, all the primary

schools in England were the product of private benevolence, chiefly in connection with the various Christian churches; and the school revenue was wholly derived from the voluntary subscriptions and from the fees paid by parents. And when the Parliamentary grant was first made it was essentially a grant in aid of local effort; and was administered wholly through the agency of the various voluntary societies—the principal being the National Society for educating the poor in the principles of the Established Church; and the British and Foreign School Society, which, though teaching no catechisms or formularies, was distinctly Christian in its character and attached much importance to Scriptural education. The former Society enlisted the sympathy of the majority of English Churchmen, and the latter was obviously more acceptable to the great body of Nonconformists, and yet was supported by great numbers of Liberal Churchmen. Besides these two great societies, the Wesleyan and the Roman Catholic bodies established schools in connection with their several congregations, and all of them were alike entitled to claim a share of the public grant, on submitting to inspection, and giving evidence of their efficiency. When in 1870 the Education Act accepted, in behalf of the nation, the obligation to make a complete provision for elementary instruction, it left undisturbed the whole field already occupied by the voluntary bodies, and simply required that wherever the existing provision was insufficient, schools were to be created at the cost of the ratepayers; and these, which are known as Board Schools, were also to receive fees from parents and aid from the Parliamentary grant on the same conditions as others.

Thus the three forms of payment may be said to represent the three separate forms of influence under which the school system has been developed. The fact that the parents paid fees gave them a right to choose the schools they preferred, and also in an indirect way to exercise control over the management. The local contributions, whether voluntary or involuntary, were provided by persons of authority and influence on the spot, who formed the local committee of management, and appointed and dismissed the teachers, and superintended the general working of the machine. And the imperial grant, administered through the agency of inspectors appointed by the Crown, served to keep every primary school in England acquainted with the standard of efficiency set up

by the authority of Parliament, to secure a qualified teacher and a proper staff in every department, and by proportioning the amount to the efficiency of the school, as tested by examination, to prevent any school from falling below a reasonable standard.

Opinion, however, in England, has long been maturing in favor of such a change as should relieve the parents altogether of their share of contribution, and make the whole cost of primary education, as in America and France, a public charge. Of the two great English parties, the Liberals were the first to advocate this course. They have for several years past contended that since the law now compels children to attend school, it is unreasonable, also, to compel the payment of a fee. They urge that it has been in many cases difficult to obtain the school pence from needy or negligent parents, and that this difficulty has seriously affected the regularity of the children's attendance. Moreover they have avowed that one strong reason for the abolition of the parents' payments was that, by throwing the main burden of maintaining the schools on the whole community, the schools would be more likely to assume a public and national character, and would be freed in a great measure from the domination of local societies and religious parties. Until recently the Conservatives have, on the other hand, resisted the demand for the abolition of fees. They have pointed out that unwillingness on the part of parents to pay is comparatively rare, and that there has been no general demand on the part of parents for relief. The total sum contributed in the form of fees amounted to nearly two millions sterling, and as it was on the whole very cheerfully paid, and paid precisely by the persons who ought to pay it, there seemed to be no necessity to remove this charge from them and add it to the burdens of the taxpayer. Further it was urged that the existing system secured local control and the co-operation of the religious bodies; and that there was great danger of injury to the voluntary schools, if the contributions of the state, and with them the control of the state, became so large as to justify any interference with the local and denominational management to which the supporters of voluntary schools obviously attach considerable importance. These considerations, however, have in the view of the government and their supporters been outweighed by others.

It has become evident to statesmen of both parties of late, that the introduction of the free system was inevitable, or that at least its introduction was merely a question of time. The state of the exchequer fortunately made the present an opportune moment for sparing the needful sum, without imposing any new tax; and the government pointed out to their supporters, some of whom received the proposal with much reluctance, that by effecting the change now, it would be made with less disturbance of the existing compromise between the state and the various classes of schools, than would be likely to arise if it were made subsequently by the other party in the state, many of whose members are in favor of a more completely secularized system, and of superseding the managers of denominational schools by governing bodies popularly elected. The Liberal party received the measure, however, with a cordial welcome, and it was passed through both houses with little difficulty. It proceeds on the assumption that the average fee hitherto paid by parents is threepence per week, or about ten shillings a year, and it enacts that this sum may be paid to the managers of every public elementary school in addition to the present annual grant, on condition that schools in which this or any lower fee was hitherto charged shall be open gratuitously; but that where any higher fee has been charged, the excess only, or the difference between threepence per week and the customary fee, shall, in future, be imposed on the scholars. All the other conditions respecting the management, examinations, and conformity to the rules laid down in the Government Education Code remain unaffected by the new Act, which has been so framed as to involve the minimum of disturbance with existing arrangements, and to arouse the minimum of hostile criticism. It is too early at present to form even a conjectural estimate of the effect which will be produced on the regularity of the scholars' attendance, although a substantial improvement may reasonably be expected when one of the main hindrances to such regularity is removed. Nevertheless, the experience derived from other countries, some of which was collected and issued as a Parliamentary paper for the information of members, is well calculated to remind sanguine persons of both parties that a system of gratuitous instruction does not necessarily secure a high average of regular attendance, unless other influences—

social, moral, and industrial—combine to produce the desired result.

It may be added that the Education Department has taken advantage of the present opportunity to repeat the counsels it had previously given from time to time, respecting the importance of School Savings Banks, and the use which might be made of a school in giving practical lessons in thrift and in insuring the habit of economy among the industrial classes. The moment at which parents are relieved of the necessity of making weekly payments for their children's school fees is obviously one very suitable to suggesting to managers and teachers the way in which the pence thus saved may be prudently economized.

In the department of higher or advanced education, one of the chief subjects of public interest during the last four months has been the proposed Registration of Teachers. Many abortive efforts have been made of late years to secure some kind of organization in the secondary instruction of the country. Hitherto all that has been done in England for public education, above the elementary, has been provided either by endowments or by private and local enterprise. The state has done nothing either to provide secondary schools, or to regulate, aid, or conduct them when provided. Now, it has generally been considered that one of the first steps in the direction of organized secondary instruction would be the creation of an authentic register of qualified teachers. The analogy of the medical profession has been frequently referred to, and the Medical Registration Act, which has been long in force, has been generally regarded as a precedent. That Act, as is well known, established a permanent Medical Council composed of representatives of each of the great Medical Corporations' interests, and confides to this council *inter alia* the power to prepare, year by year, an authorized list of qualified practitioners. At the same time it enacts that unregistered persons may not recover fees; and it imposes serious legal penalties on those who engage in medical practice without such qualification. It is contended by some of those who are most earnest in their efforts to make teachers an organized profession, that a similar course should be pursued in regard to all persons professing to teach; and that all such persons should be required to give evidence of their qualification and to be registered, and that unregistered persons should, if not

actually forbidden by law to become schoolmasters and mistresses, at least be disabled by law from recovering fees.

To this argument it is replied that the analogy between the medical and the teaching professions is, to say the least, very imperfect. There are in medicine and surgery well-known and long-established professional corporations—the Royal Colleges of Physicians and Surgeons, the Society of Apothecaries, and the universities which grant the degrees of M. D.—and all of these have been empowered for many years past to grant licenses to practice. There is no grievance in a law which forbids any man who is not provided with a diploma from one of these authorities to practice the medical profession. But in the teaching profession no similar system of diplomas can be said to exist. There are university degrees for teachers of the highest rank, and these are often regarded as sufficient, although after all they do not afford evidence of any knowledge of the art or philosophy of education. And in the elementary schools which receive aid from the Parliamentary grant, it has long been required that the master or mistress should possess a certificate of competency, which, though it does not attest any very high scholastic attainments, is always a very real testimony to the holder's professional experience and power to teach. But between these two classes—those engaged in the highest and in the primary schools respectively—there is a large class of intermediate teachers who possess no certificate or diploma whatever; and who, however well qualified by natural aptitude or by proved success, have had until very recently no means of obtaining official recognition; simply because there was no tribunal or public authority which had the power to award it. The universities of Cambridge and London, Edinburgh and St. Andrew's, and the College of Preceptors, have of late instituted very good examinations in the art, theory, and history of teaching: and these are held in increasing esteem by young men, and especially by women, now entering the profession. But from the rank and file of teachers now employed in secondary and intermediate schools, whether public or private, it would be manifestly unfair to exact any new test; and in their case a registration bill which imposed upon them any legal or social disqualification would be a serious injustice.

These being the preliminary difficulties in the way of a general measure for the training and registration of teachers, it is

interesting to know that two bills of a more or less tentative character were introduced by private members in the last session of Parliament—the one by Sir Richard Temple, understood to have been prepared by the College of Preceptors, and the other by Mr. Acland, who was the representative of the large and increasing body of schoolmasters and mistresses who compose the Teachers' Guild. Both measures provided for the formation of an educational council composed of representatives of the Crown, the universities, and the general body of teachers; and both contemplated the preparation of a scholastic register, which should ultimately contain the name of every qualified teacher, and there was also in both bills a further provision that after a certain period no unregistered person should be legally entitled to recover fees. The government adopted a course not unusual in such cases, and referred both bills to the consideration of a select committee composed of members from both sides of the house, and presided over by the vice-president of the council. This committee examined a great number of witnesses, and has recently published the evidence so collected, and a short report of its own. To American readers analysis of the evidence offered would be uninteresting and would certainly appear to be lengthy and tedious, especially as at present the whole question, though advanced a stage, has not come within what Mr. Gladstone calls the "sphere of practical politics." Whenever a measure of this kind is proposed by the government, and either becomes or is likely to become added to the statute-book, your readers may like to know something more of its provisions and of the nature of the problems which it purports or intends to solve. At present it may suffice to record that the committee, after hearing evidence, expressed a general approval of the principle affirmed by both bills, and summed up their report with these recommendations: (1) That registration of teachers in secondary schools is desirable; (2) that existing teachers should not be put on the register merely as such, but should not suffer from any legal disability; (3) that both existing teachers and future teachers should be admitted to the register on producing such evidence of intellectual acquirements and teaching capacity as might be required by the council; (4) that additional facilities are required for the training of teachers in secondary schools; (5) that any educational council to be established for the furtherance of such registration should be

composed of nominees of the state, representatives of the universities, and members elected by the teaching profession.

These recommendations of the select committee were presented to Parliament at the close of the last session, and have not yet been embodied in a bill. It remains to be seen whether the legislature will look favorably on the proposal, and whether there is any chance of carrying into effect a scheme drawn on these lines. But although in the coming session it is not unlikely that other measures of more pressing and urgent interest may occupy the attention of both houses, it is tolerably certain that the whole question of the better training of teachers, the registration of their qualifications, and the better co-ordination of all the agencies at work in England for advanced education, will ere long receive increased public attention.

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VII.

EDITORIAL.

The vexed question as to the next meeting-place of the National Educational Association has been settled. Saratoga has been designated. The executive committee, in whose hands this decision rested, gave long and patient attention to the claims of Helena and Seattle, that were so ably pressed upon them, and finally came to the conclusion that the highest interests of the Association would be best served by holding the meeting of 1892 at some accessible point in the East. Saratoga commended itself by the excellence of its hotel accommodations, the attractiveness of its natural surroundings, and the cordial invitation tendered in its behalf not only by the local authorities, but by the educational leaders in the State of New York. The educational journals, such as *The School Bulletin*, the *Public School Journal*, and *Intelligence*, that represent not the irresponsible opinions of hysterical individuals, but the sincere convictions of the men and women who make these national meetings really valuable, advised the action that has been taken, and the leading educational workers of the South, West, and East were of the same mind. The decision was made peculiarly difficult by the enthusiasm and energy displayed by the cities of the extreme Northwest in their own behalf; but that it was wise can hardly be doubted even now, and will be abundantly proved by the event.

The choice of Saratoga as the place of meeting in 1892 makes it both possible and easy to construct the programme so that the gathering shall be one of unusual significance and value from a strictly educational point of view. There is a very general desire for this throughout the country. It has been said, but by no one with any claim to be taken seriously, that the least important feature of the meetings of the National Association is the bringing together the most distinguished and experienced educators in the country. One would suppose, however, that a successful educational meeting must

center about just such persons. A traveling menagerie or a picnic could safely dispense with them. That college presidents and professors, superintendents and principals, and ambitious class-room teachers, will gather in large numbers at Saratoga, is certain; whether or not those attend whose educational interest is over when the reduced railway rates are secure for a summer jaunt, is a matter of comparative indifference. It is as yet altogether uncertain what will become of the National Association meeting in 1893, in view of the Chicago Exposition, with its great array of educational congresses and educational exhibits. For this reason it is doubly important that the meeting at Saratoga shall be attended by a large number of thoroughly representative educational men.

The Comenius celebration, already announced in these columns, has been definitely arranged for, and in such a way as to secure the attention and co-operation of a large number of school-men from all parts of the country. The committee having the celebration in charge, after conference with Superintendent Sabin of Iowa, president of the Department of Superintendence for the year, have decided to incorporate it in the programme of the Department of Superintendence at its meeting to be held in Brooklyn on February 16, 17, and 18, 1892. The evening of Thursday, February 18, is to be devoted to commemorating the three hundredth anniversary of the birth of Comenius, the exact date of his birth being neglected because of the greater significance of the event and the desirability of having the presence and interest of the superintendents. The exercises, as planned, will consist of three papers: one dealing with the private life and personal characteristics of Comenius; one describing his text-books, with illustrations of representative pages and cuts from his *Orbis Pictus* and *Janua Linguarum;* and one estimating his permanent services to educational thought and practice. The celebration will doubtless attract very general attention, and serve to arouse a new interest in the life and writings of this educational reformer of the highest rank.

The close connection which exists in the United States between politics and education is more than unfortunate; it is unintelligent. At the recent November elections many

hundreds of thousands of votes were cast that affected directly the welfare of the educational system of at least two great States, but—it is entirely safe to say—without so much as a thought being given to that fact. Questions of party preference, of personal administration, modes of taxation, or of financial policy, determined how the votes were to be cast; the schools had to await the fortunes of a war conducted along lines entirely foreign to them and their interests. In Iowa, for example, the State superintendent of public instruction is elected by the people. The present incumbent, a man of distinguished services and wide reputation, should have been nominated by every political party that held a convention. What his political views are, is a matter of no importance. His office is administered on educational, not political lines. But party candidates were named against him, and the result of the polling is that the political views of his colleagues did not secure the popular indorsement. It seems probable at this writing that he is, therefore, to be superseded in office.

In the great State of New York, with a common-school system of magnificent extent and importance, a similar state of affairs existed. The term of the present superintendent of public instruction expires in the spring of 1892. The office is filled by the legislature, both houses sitting in joint meeting for the purpose. Unquestionably, thousands of persons, who would never think of disturbing the present admirable school administration, voted for legislative candidates whose first thought would be to fill the office with a man whose views on questions of State and national politics agreed with their own. For several days the result hung in the balance, and the teachers in every county of the State anxiously awaited the final announcement of the voting. Why? Simply because it meant either the continuance in office of the present superintendent, or his displacement by an untried successor. During his six years of office Judge Draper has done more for the common-school system of the Empire State than any administrative officer ever before accomplished. He has achieved a reputation as an educational statesman, one of the very few that this country has produced. He occupies a commanding position before the country. Many improvements remain to

be accomplished, that he can accomplish more speedily and effectually than anyone else can possibly do. The system that admits his displacement for political reasons is an insane one. The makers of constitutions, and the framers of laws, must be taught the necessity of providing the schools with officers not subject to removal for reasons having no relation whatever to educational policy and administration.

Last winter a course of lectures for college teachers, and those who proposed to become such, was given at the Johns Hopkins University with a large measure of success. The topics selected were practical, and the mode of presentation adopted was more or less informal, resembling a conference rather than a set lecture. This year the same plan is to be followed, and the series of pedagogical conferences is already in operation. It is not at all impossible that the result of this experiment may be the rehabilitation of education as a subject of university teaching and study at the Johns Hopkins. No institution in this country trains so many teachers of collegiate and secondary grade as the Baltimore university, and it is eminently fitting that their equipment should include not only accurate and independent scholarship, but an acquaintance with the educational forces and problems of the time.

It is a pleasure to call attention to the following resolutions that were passed at the thirty-fifth annual meeting of the Association of Colleges in New England, at its recent meeting. The resolutions have been laid before the faculties of the several colleges represented in the association, and are to be acted upon next year. The resolutions, with their preamble, are as follows:

"The Association of Colleges in New England, impressed with the real unity of interest and the need of mutual sympathy and help throughout the different grades of public education, invites the attention of the public to the following changes in the programme of New England grammar schools, which it recommends for gradual adoption:

"1. The introduction of elementary natural history into the earlier years of the programme as a substantial subject, to be

taught by demonstrations and practical exercises rather than from books.

"2. The introduction of elementary physics into the later years of the programme as a substantial subject, to be taught by the experimental or laboratory method, and to include exact weighing and measuring by the pupils themselves.

"3. The introduction of elementary algebra at an age not later than twelve years.

"4. The introduction of elementary plane geometry at an age not later than thirteen years.

"5. The offering of opportunity to study French, or German, or Latin, or any two of these languages, from and after the age of ten years.

"In order to make room in the programme for these new subjects the Association recommends that the time allotted to arithmetic, geography, and English grammar be reduced to whatever extent may be necessary.

"The Association makes these recommendations in the interest of the public-school system as a whole; but most of them are offered more particularly in the interest of those children whose education is not to be continued beyond the grammar school."

These resolutions represent a direct and intelligent attempt on the part of the higher institutions to guide and control the lower. It is in this way that the educational system of Europe has been made so effective. Hitherto in this country, particularly in the East, this course has not been followed. That it is now being more generally entered upon, is one of the most encouraging signs of the times. There is one detail, however, in which the resolutions above cited are distinctly open to criticism. They depart from the most authoritative pedagogical standards in counseling that the study of algebra be begun before that of geometry. It must be very bad teaching indeed that postpones the study of simple and intuitional space-relations until after some mastery of algebraic symbols and processes has been gained. This error should not be allowed to stand when the resolutions come up for final action.

This year, as last, President Adams, of Cornell, is the first of the university presidents to put his annual report in the

hands of the public. The report and its appendixes show in detail the operations of a great educational institution. It is noted as a significant fact that every year a larger number of students come to Cornell from other colleges. This is true also at Harvard, and perhaps elsewhere. Whether college presidents and faculties choose to recognize it or not, this tendency is only one evidence of the existence of the distinction that is being slowly but surely drawn between the colleges and the universities. It is futile to object that the "old college" must not be partitioned between the school and the university. New educational conditions demand a readjustment of the old institutions. During the later years of their college residence, the ambitious, enthusiastic students are certain to gravitate more and more rapidly toward the large universities, where special libraries, laboratories, museums, seminary rooms, and highly-trained special teachers are provided for them. President Adams, more far-sighted than some of his contemporaries, recognizes this fact, and is shaping Cornell's development accordingly.

VIII.

REVIEWS.

Outlines of Psychology.—By HARALD HÖFFDING. Translated by MARY E. LOWNDES. London and New York: Macmillan & Co., 1891, pp. xi, 365.

This volume makes a most valuable addition to the psychological literature in which our language has always been rich and now grows rapidly richer. Though not from the original Danish, the translation is from the German translation which Dr. Höffding has accepted as adequately representing the original. And Miss Lowndes is to be congratulated, not only on the accuracy of her rendering, but on its good style, its simplicity, and its clearness—features which also characterize the German translation of Dr. Bendixen.

This is not the place for an exhaustive notice of Professor Höffding's volume. What is desired is simply an estimate of its value as a text-book. But this cannot be determined without settling the kind of pupils who should study psychology. Here there may be differences of opinion. But since, in the development of mind, observation is earlier than reflection, it would seem that the sciences of nature should precede psychology in so far as it is an introspective science; while, in so far as it is an experimental science, it is plainly dependent upon physiology, physics, and chemistry. Again, the humanistic disciplines—language, literature, and history—appeal to the youthful mind much earlier than psychology, for which they pave the way, and to which they furnish important data. In an ideal scheme of things, therefore, there should be no teaching of psychology in the schools and academies, and none in the colleges and universities before the junior or sophomore year, at which point students should be about nineteen years of age and tolerably well grounded in the elements of physical science and humanistic culture.

For such students, under the guidance of a well qualified teacher, Höffding's *Outlines* seems to me a quite ideal text-book. It is not easy to particularize where all is so good. The author knows and rigidly observes the limits of psychology as a science, yet he sends many a flash of light on the avenues that lead at the one boundary to physiology and at the other

to metaphysics. The exposition, never obscure, is often brilliant, and is always compact with facts. Indeed the wealth of the author's knowledge is as surprising as his facility in the command and presentation of it. He is at home in the older semi-metaphysical and in the newest experimental and physiological psychology, whose teeming literature he uses with insight and great skill. Principles are supported by facts, and facts are informed with principles. The author's psychological talents and knowledge are supplemented by an extensive acquaintance with literature; and nothing could be happier than the illustrative citations from Goethe and Shakespeare, to say nothing of Longfellow and other greater and lesser writers. Students are to be congratulated on having the quintessence of the science of psychology presented in a fashion so orderly, so fresh, and so attractive. Mr. Sully's well known work is larger, but it is more lightly freighted with facts, especially with the newest experimental results. In this respect it would be difficult for any text-book to surpass the scholarly *Outlines* of Prof. Ladd; but whereas Prof. Ladd restricts his domain to physiological and experimental psychology, Prof. Höffding ranges over the entire field of psychology. His work reminds one in many ways of Prof. Murray's admirable *Handbook*. Both writers are masters of a clear and pleasing style; both have the faculty of simple and orderly arrangement and classification; both have written out of the fullness of a mature knowledge manuals adapted to beginners. The difference is that whereas Prof. Murray always keeps the beginner in view, as it were, and aims primarily at elementary matter and simple treatment, Prof. Höffding aims primarily at fullness and compactness of content, yet never so as to forfeit perspicuity. It would be overstepping the mark to compare the works to first and second readers in psychology, yet a very youthful student might think the comparison not altogether inapt.

One criticism only I will venture to make on Prof. Höffding's excellent manual. His sense of proportion is everywhere so marked that I am greatly surprised to find nearly as much space given to the psychology of feeling as to the psychology of cognition. Had it been otherwise, a somewhat fuller treatment might have been given with advantage to sensation and especially to perception.

J. G. SCHURMAN.

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A Conference on Manual Training. The Papers read and a phonographic report of the Discussions at the Sessions of a Conference on Manual Training, held at Boston, April 8–11, 1891.—Edited by Mrs. ISABEL C. BARROWS. Boston: The New England Conference of Educational Workers, 1891, pp. 182.

The Conference of which this volume is the record, marked an important stage in the history of the manual training movement in the United States. The Conference itself was more noteworthy than its constituent parts. There were no theoretical papers of importance, and many of the purely pedagogical questions raised had been authoritatively settled some time before. But the reports of individual experiences, the remarkable exhibition of school work, and the approval given to the whole movement by many leaders of opinion from outside of the ranks of the schoolmasters, made the occasion one of decided interest and value.

It is very significant that the vociferous opposition to manual training, as a non-intellectual and demoralizing factor in the school, which was so familiar five years ago, played no part in the Conference. Indeed it no longer exists. As the more temperate and scientific advocates of these new branches of study have made it clear, both by theoretical argument and practical demonstration, that manual training is mental training, and that it comes in, not to displace but to supplement and render more effective the subject-matter of the older curriculum, the former opponents of the movement have become its friends; and no well-informed person doubts today that manual training has been, and is, an immense influence for good in the public-school system of the country. To this fact the Boston Conference was a willing witness.

The fact that the speeches recognized that manual training is a broad name for a group of subjects, and not merely the technical designation of a specific set of exercises, will not escape the notice of the careful reader. This, too, is in accord with the best thought on the subject. It was in this spirit that Sloyd, form-study and drawing, shop-work, color, and the kindergarten were all touched upon. The economists, too,—who are one of these days going to play a larger part in educational discussions than they do now,—were represented by Professors James and Patten, both of whom read papers that were full of information and suggestion.

Save in the one matter of Sloyd, the very extensive European experiences with some phases of manual training were

not sufficiently taken into account, particularly by those who doubted whether a set of manual exercises for pupils in the grades between the kindergarten and the high school had yet been devised. A careful and accurate presentation of the best manual-training work in elementary schools abroad, would have been a decided addition to the papers read. Perhaps, however, a place will be found for that at the next Conference—for one valuable experience-meeting of this kind only paves the way for others.

N. M. B.

La Escuela Primaria en Francia. Informes sobre el Congreso Pedagojico Internacional y la sección escolar francesca de instrucción primaria en la Esposición Universal de Paris de 1889.—Por el Dr. J. B. ZUBIAUR, Inspector de Colejios Nacionales y Escuelas Normales. Buenos Aires: Taller Tipográfico de lo "Penitenciaria," 1891, pp. 345.

There is in this book some declamation convincing one that Buncombe County is not entirely comprised within the limits of North Carolina. This blemish apart, the book is a notable contribution to current pedagogic literature. It comprises two reports, the first on the International Pedagogical Congress, and the second on the French Primary School exhibit, at the Paris World's Fair of 1889. In the exhibit, every school was to show its material equipment, methods and processes, and obtained results. Some schools did and some did not, and the whole educational exhibit was scattered badly. If the French, with their passion for official organizing machinery, did so poorly by their schools, we, with our Anglo-Saxon habit of pushing ahead, contemptuous of symmetrical neighborhood, will bungle badly at Chicago unless matters are carefully ordered from the start. The teachers of the country ought to be wide-awake from the moment the plan of the Chicago Exhibition begins to be mapped, to protest against the educational exhibit being tucked away piecemeal in odd nooks of various departments. However, France succeeded in making an extremely favorable showing. In 1837, the number of recruits able to read and write was 53.3 per cent.; in 1887, 89.9 per cent. The primary normal schools for men have increased from 74 in 1872 to 90 in 1889; those for women from 79 to 86. Note, by the way, the relatively greater increase of male normal schools. Three schools for the training of normal-school teachers have been established,

institutions the very need for which we do not feel. Public primary schools, including Maternal schools, feebly and unsuccessfully trying to be Froebelian, were 59,392 in number in 1872; 70,193 in 1888; school age from two to thirteen. The number of primary teachers in the public service rose from 79,239 to 105,600; that of the students from 3,835,991 to 4,492,894 viz., boys from 2,245,810 to 2,487,945, girls from 1,590,181 to 2,004,949. Note the ratios of sexes. The attendance of girls has increased relatively faster. That is the gratifying fact. The other, not so gratifying, is that it is not yet nearly equal to that of the boys. The total budget for 1889 was 175,400,000 francs, the state paying over 90 millions, the departments over 15½, the communes over 69½. Note the preponderance of the state and the insignificant contributions of the departments—about 9 per cent. Of the latter 14 9/10 millions were obligatory appropriations, while of the state appropriation 3⅓ millions were optional. Of the 69½ millions communal appropriations, 39 millions were optional. Psychological comment is unnecessary. While we have increased our parochial schools, France, a Catholic country, be it remembered, has done the reverse. The schools have increased from 75,635 in 1882 to 80,209 in 1887, an increase of 3711 public and 863 private schools in five years. But while the lay schools have risen from 51,730 to 57,611, the clerical schools have fallen away from 11,265 to 9097. The teachers numbered 103,008 for public and 42,660 for private schools in 1887. The number of pupils had risen from 5,341,211 in 1882 to 5,526,365 in 1887, an increase of 3 per cent. in five years. The percentage of attendance on enrolment was 91 in December 1886 and 88 in June 1887. The most important book exhibited was Buisson's Pedagogical Dictionary of Primary Instruction. But, after all, statistics are purely external and school statistics are especially superficial. The real question here is as to spirit, methods, and results which cannot be statistically represented. This question Dr. Zubiaur attempts thoroughly to investigate. Unfortunately, this, the most valuable part of his report, is unavailable for Anglo-Saxon readers until a large personal equation has been constantly taken into account. Dr. Zubiaur's purpose in writing the book is polemical. Even Germans admit that Tacitus painted their savage ancestors in somewhat romantic colors. The educational Tacitus of the Argentine Republic attains a palpably similar effect as regards

French Primary Education. This tendency is intensified by his standard of comparison. Starting with a knowledge of Argentine education, his outbursts of enthusiasm at what he sees at Paris are at times almost pathetically naïve. Yet when the uniform strain of laudation is broken by what seems pretty nearly a slip of the pen, as when he admits that some exhibits show the hand of the master rather than the student, the crack in the veneer lets us see a somewhat different wood underneath. Still France has done nobly, especially in manual training and object teaching. She is worthy of all praise. But it is impossible within these few lines to distinguish the fact from Dr. Zubiaur's way of putting it. One word on the International Pedagogical Congress. Germany of course, was excluded, which, in a Pedagogical Congress, somewhat limits the idea of internationality. Stated statistically, this is the amount of internationality remaining: Of 197 memorials sent to the committee on organization for redaction, six were contributed by foreigners. At the opening of the Congress, there were present more than 1500 French teachers and about 100 foreign delegates. As the voting was by absolute majorities, it can easily be seen whether the solutions reached on the three questions submitted—professional education in the primary school, the extent to which women should be employed in primary education, and practice-schools attached to normal schools—were French or international. When an English delegate expressed a hope that an International Educational Association might result from the Congress his idea was good, but putting it into practice is quite another matter.

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Sir Walter Scott's Marmion.—Edited by MARY HARRIOTT NORRIS. Boston and New York: Leach, Shewell & Sanborn, 1891, pp. iv, 281.

Shakespeare's As You Like It. With an Introduction and Notes.—By K. DEIGHTON. London and New York: Macmillan & Co., 1891, pp. xxii, 164.

Literature is now read in schools, both high and elementary, as well as in colleges. A great demand has thus been created for the works of classical authors, edited for school use. Publishers have not been slow to meet the demand by bringing out editions of such works as seem to be suited to the purpose.

Of these works some are well edited and some are poorly edited. In the latter class I am constrained to place Miss Norris's edition of Scott's *Marmion*. The first requisite of a school edition of one of Scott's poems is an account of the author that will give the young reader a vivid idea of his personality and his genius. A brief biography Miss Norris attempts, but it is not a success. His personality in youth and early manhood is, indeed, brought out with sufficient distinctness, because the account is given in the master's own word; but when Miss Norris comes to characterize his genius she is sadly at fault. She seems unable to state her thought in clear and simple language. Most children will puzzle a long time over the following, before they gather its meaning; "He was sufficiently free from the unhappy egotism which marks so many authors to realize when he had exhausted the vein from which was wrought 'The Lay,' and 'Marmion' and the 'Lady of the Lake.'" The sentence is both awkward and obscure. Again, what is to be thought of this? "The genius of a man who could write poems like these, and novels like 'The Heart of Midlothian' and 'Guy Mannering,' must touch the imagination as epic in its proportions, and ally its possessor in versatility with Shakespeare and Goethe?" What will a schoolboy understand by *epic?* Can genius, in any proper sense of the term be spoken of as *epic?* And is versatility the chief characteristic of Scott? Or of Goethe? Or of Shakespeare? If they had been merely versatile, they would long since have sunk into oblivion.

The next requisite of a school edition of one of Scott's poems is a historical and critical introduction that will throw light on the manners of the age and the land in which the scene is laid, explain the meters, and place the student *en rapport* with the chief characters. Such an introduction is entirely wanting. Of Miss Norris's annotations it may be said that they are of the Gradgrind description: they abound in facts. That these facts embrace a prodigious amount of historical and archæological knowledge, may not be questioned; but such knowledge is for the most part worthless, except as it throws light on what might otherwise be obscure in the poet's pictures. If the explanation of a historical or geographical allusion does not heighten the effect of the poetry, it would be better omitted altogether. Now, most of Miss Norris's explanations are calculated, not to heighten the effect of the

picture, but to destroy the illusion it would naturally produce. Take for instance the beautiful passage beginning:

> Oh, for a blast of that dread horn,
> On Fontarabian echoes borne,
> That to King Charles did come,
> When Rowland brave, and Olivier,
> And every paladin and peer,
> On Roncesvalles died.

Here are the notes:

"St. 33. *Fontarabia.* 'A fortified town of Spain in Biscay, on the boundary between France and Spain, etc.'"

"St. 33. *Roncesvalles.* A valley in Navarre, where Charlemagne's army, in the eighth century, was defeated by a combined force of Arabs, Navarrese, and French Gascons, etc."

For taking the wind out of the sails of poetry, commend us to such notes as these. It is only too evident that Miss Norris knows neither how to edit Scott nor how to prepare annotations that will be stimulating to the student and helpful to the teacher. It is a minor fault, but one that should not occur when there are so many excellent models to imitate, that the plan of reference between the text and the notes, which are at the end of the book, is so defective that it is quite difficult to find a note when it is needed.

Of a very different character is Mr. Deighton's edition of Shakespeare's "As You Like It." The introduction is a graceful piece of writing and supplies just the knowledge that a young student needs for understanding and appreciating the play. The notes are clear and helpful; but, while the editor has avoided the fault of being too technical—the fault to which Shakespearean annotators are all too prone—it may well be doubted whether he has not fallen into the error of explaining too much. Nowhere does the maxim that a child should be told nothing it can find out for himself, apply more fully than in the critical reading of literature.

W. H. M.

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A Commercial Geography. For Academies, High Schools, and Business Colleges.—By JOHN N. TILDEN, M. A., M. D. Boston and New York: Leach, Shewell & Sanborn, 1891, pp. 187.

This small quarto, fresh from the press, aims to present in a more comprehensive and systematic manner than is usual to the ordinary school geography, the leading facts of the world's

productions, industries, and commerce. From the author's point of view we should teach our boys more of the "facts bearing upon the active commercial questions of the day." This is good in the abstract.

Compared with the study of political economy, civics, physics, chemistry or history, the study of commercial geography is pre-eminently more practical. Such is the author's opinion, but many good teachers will dissent from it. That some knowledge of the world's commerce and of the various industries of mankind is essential to a symmetrical education, no one will deny. That any large part of the boy's school life should be spent in memorizing the natural and artificial productions of his own country even, not to say those of foreign countries, is hardly a debatable question. The schools may fairly leave some things for after acquisition. So much for the aim of the book.

When we come to examine it carefully we can but admire the author's good judgment in the selection of "leading facts" where such a wealth of material is at hand. The book is exceedingly well written and in parts thoroughly interesting, features somewhat rare as school geographies go. The introductory chapters upon mathematical, physical, and political geography should be stricken out. They contain nothing but the ordinary definitions which every high-school boy is presumed to know. The most unique and interesting chapter is that upon Commercial Highway, Division of Labor, Money, Transportation, Ocean Routes, etc. There is a lamentable deficiency in maps and charts which should be remedied in a future edition. No one to-day would think of teaching without them. The few given are excellent. More can be learned in one hour from the map on page 53, showing the mineral resources of the United States, than from days of study of the textual matter further on. Taken as a whole Dr. Tilden's work is worthy of the highest commendation. There is no other commercial geography in English to compare with it.

A. B. P.

A Complete Lexicon of the Latinity of Cæsar's Gallic War.—By E. G. SIHLER, Ph. D. Boston: Ginn & Co., 1891, pp. 188.

Students of Latin literature have for so long a time acknowledged the superiority of the Germans in all matters pertaining to classical learning and criticism, that they will note with sincere pleasure the successful invasion of this field by

the author of "A Complete Lexicon of the Latinity of Cæsar's Gallic War." The preparation of such books as this involves so much drudgery that there is no danger that their number will ever be too great, and yet their value is such that this admirable volume will be a welcome addition to the labors of Merguet, Mensel, Menge and Preuss.

The size of this little work is not at all commensurate with the immense amount of time and labor which must have been spent upon it, nor does it prepare us for the erudition displayed in it. It is based upon Holder's work and "aims to furnish an exhaustive vocabulary and *usus loquendi*, along with the greatest possible compactness." Every word used by Cæsar is given, all the various applications and associations of each are tersely, yet precisely explained, all the passages containing them are located, and in nearly all cases, quotations from the text, logically grouped, are given at sufficient length to indicate the context. All the different readings of the many textual critics of Cæsar are given, and the more important emendations noted. There is besides a wealth of exegetical comment.

Whether the author realizes all that he promises in his title is extremely doubtful, but all must confess that he gives us more than the size of the book would lead us to expect. The work presupposes an acquaintance with the text and it may, therefore, seem unnecessary to suggest that while quotations are given for almost every occurrence of a word, they are in many cases too short. In some cases a closer adherence to the forms referred to in the text would seem desirable. Then, too, for the location of some words the reader is referred to other words. These references are sometimes vague, and even misleading. This is, however, due to the effort of the author to condense. In preferring to confine his work to as small a compass as possible without impairing its usefulness, rather than by quoting more fully to make a bulky, and hence less convenient, volume, the author must be commended, and the work of condensation has, in the main, been admirably done. There are, as the author suggests, orthographical inconsistencies, but they are, fortunately, few. Contrary to what one would expect in a work of this character, typographical errors are remarkably rare.

While the lexicon will appeal most forcibly to teachers and advanced students, it will be extremely useful to those who

are reading Cæsar, or are studying his simple, yet vigorous style. All who are interested not only in the study of Cæsar's writings, but in exact Latin scholarship, will welcome the work as a most valuable contribution to the literature of classical criticism.

HENRY SNYDER.

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Select Essays of Macaulay, Milton, Bunyan, Johnson, Goldsmith, Madame D'Arblay.—Edited by SAMUEL THURBER. Boston: Allyn & Bacon, 1892, pp. xiv, 205.

Mr. Thurber has earned the thanks of all who are trying to improve the teaching of English in our own preparatory schools, by this unusually helpful and sensible edition. For more than one reason Macaulay is an especially suitable author for school study. The brilliancy and assurance of his style, its impetuous dash and freedom of movement, still captivate youthful readers, untouched by the greater staidness and severity of the prevailing fashion. The qualities which made Macaulay the great popularizer of literature and history among the middle-class reading public of his time give his work a similar value in the schoolroom. Then the innumerable allusions which his enormous literary equipment made possible afford the student unusual opportunities for research and collateral reading. The treatment of these allusions in the notes forms one of the most conspicuous merits of this edition. Mr. Thurber defined his position concerning the annotation of English classics for schools, in an article in the *Academy* for May, 1889. He deprecated the tendency to burden the text with notes which too often merely give the pupil what he should be trained to find out for himself. He urged that the ideal method is a reference library in every school, and the English classics in good type, expurgated and without notes. In Mr. Thurber's words: "Pupils should dip their own water from the springs among the rocks, and not depend upon a modern faucet which runs whenever you turn it on." While at first sight Mr. Thurber seems to have departed from this position in giving us an annotated edition of an English classic, examination of the notes shows that he has really taken this manner of forwarding the method he formerly

advocated. The notes aim to point the pupil to "the springs among the rocks," to stimulate and direct research instead of rendering it superfluous. Thus, instead of attempting to explain what is meant by "the fooleries of Della Crusca," the editor contents himself with the following suggestions: "Look up this name in Adams' Dictionary of English Literature. See also Encyclo. Brit. under the word Academy, Vol. I, p. 73. Read up also on William Gifford. If you read French and have access to Littré's large French Dictionary, see what he says under the word Crusca, p. 196." A classic so edited could be made to yield surprising results in the hands of a competent teacher, provided the necessary reference books were readily accessible. It is obvious that the method of teaching English Literature advocated by Mr. Thurber, and now illustrated by notes similar to the one just quoted, would do much to forward that intelligent and scholarly use of books, and that ability to work out of leading-strings, which the wise teacher makes it one of his chief objects to develop. A series of English classics well edited, in accordance with Mr. Thurber's ideas, would tend to reform the teaching of English Literature in our schools.

HENRY S. PANCOAST.

PHILADELPHIA, PA.

Plane and Solid Geometry.—By SETH T. STEWART. New York: American Book Co., 1891, pp. x, 406.

The author in his preface states distinctly enough the three purposes of teaching geometry: logical training, practical application, scientific application. He goes on, however, to indicate pretty clearly that the first purpose is by far the most important one in his own mind; for he says hardly a word more in the preface about the two other purposes, which are dismissed in a single sentence.

It is true that a majority of pupils gain no other advantage from geometry than a logical training. There is a very insidious fallacy which has much influence on many teachers: that, because formal education is an important purpose, it should govern the text-books, and the other reasons for studying the subject should have no large influence. Quite the contrary is the case; the best text-books, from Euclid down, have been written by eminent mathematicians who have been also admirable teachers, have selected the matter according to the

needs of theoretical and practical science, and have thus given enough for the educational purpose. In other words, all geometry is and must be logical, and the practical uselessness of a proposition is no proof of its educational value. The ideal text-book should contain matter which is selected for its scientific and practical importance; the selection should be made with great care and intelligence, so as not to omit the most essential and far-reaching parts of the subject; and to accomplish this the author should have a wide acquaintance with mathematics, both theoretical and practical.

The book before me does not exhibit such a wise and careful selection. Many important parts of the subject are lightly treated, or even entirely omitted, while a range of rather difficult propositions of no special practical value is introduced, apparently from foreign text-books. The reviewer has been unable to find a standard and very important proposition relating to the segments of the side of a triangle made by the external and internal bisection of the opposite angle; has noticed the inadequate treatment (p. 246) of the measurement of the circle; and has vainly attempted to make out from the book what is meant by a "pedal triangle" (p. 289). The arrangement of the plane geometry differs from that which is usual, on the plea of a better collocation of the matter which refers to one subject. It seems to an old-fashioned teacher a pity to treat similar triangles in Book 7, now that proportion is so familiar to our pupils from a quite early age. Euclid introduces it in Book 6, but his Books 7 to 10 relate to arithmetic, and his order is out of date at present. Moreover, there is a cross-division which is by no means a help to the scholar, in dividing Books 1 to 4 (straight lines and angles, triangles, quadrilaterals, circles) according to the subject-matter, and Books 5 to 7, proportion, mensuration, plane figures, similar figures, according to methods of treatment.

The reviewer has no doubt that a skilled manipulator of boys can use this book to enable his pupils to pass examinations, even at Harvard; but he has very grave doubts whether they will be so well taught geometry by its help as from the books of the best reputation which have preceded it.

TRUMAN H. SAFFORD.

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IX.

EDUCATION IN FOREIGN PERIODICALS.

Professor Laurie on Present Educational Problems.

[The following extracts are taken from the presidential address of Professor S. S. Laurie of Edinburgh, at the last annual meeting of the Teachers' Guild of Great Britain and Ireland, as reported in the London *Journal of Education*.—ED. EDUCATIONAL REVIEW.]

Curriculum of Secondary Schools.—"A multitude of subjects pressing for recognition in the school, and a multitude of deadening and oppressive examinations following close upon the teaching—these are the evils (as we all know) under which secondary education groans in these days. It becomes us to consider whether, under modern conditions, we can secure for teachers and scholars some of the concentration which was the chief merit of the schools of former times. No sound educationalist is an encyclopædist. On the other hand, the educationalist who holds that we can prepare the youth of the country for the work of the twentieth century by means of a little of one dead tongue and less of another, must be accounted an anachronism. We cannot allow boys and girls of eighteen years of age to pass out of our hands as educated who are ignorant of the national and world life which they inherit, or of the living nature in the midst of which they are placed, and which they have to bend to their purposes. And yet we cannot teach everything, and must be often perplexed in presence of the numerous subjects—each with a certain completeness in itself—which now claim admission to the school curriculum. Which and how many of the branches into which human knowledge has now ramified shall we select for the secondary school, and how far shall we carry the study of each, are questions which not only Great Britian, but the whole civilized world may be said to be now considering.

"It is a fair question, Has the science, or theory, of education any light to throw on our darkness, or are we to grope on empirically, hastily taking up, and as hastily dropping, first one subject and then another, in obedience to the demands of an uninstructed and exacting public, and fitting those we select into the time-table as if it were a piece of mosaic? I think

that theory may *help* us at least to a solution of our difficulties, if it cannot wholly solve them. First of all, the theory of education requires us to transfer our attention entirely from subjects of instruction to the minds we are instructing. This alone is a great point gained. When we take up this attitude to education, we at once see, for example, wherein lies the truth and falsity of encyclopædism. Encyclopædism is unquestionably a characteristic of a completely educated mind, but not encyclopædism in respect of the material of acquired knowledge, but encyclopædism of faculty. That is to say, a complete education should bring the mind into intelligent contact with representative studies, and representative methods of investigating truth. Encyclopædism, in the sense of universality of *faculty*, would seem to be within our reach."

What is our Telos? "Thus far there is guidance; but just at this point, theory again interposes, and asks the question, 'To what, and for what, ultimate end all this labored training of faculty?' The question will be answered by theory thus: In order that each man may do efficiently his special work as a member of society; but even this only in subordination to a supreme end—the fulfillment of the ethical purpose of human life in him. The ethical end governs all (and by ethical I mean the moral and religious). It comes to this, then, that it is *general* power of faculty we have to give, and with this, the substance and motive forces of ethical living. A leaving-examination, looked at from this point of view, consists of two questions, which have to be addressed to every pupil:

"1. The first is one question, but it has a twofold aspect. I ask a youth, on this or that point, which may be suggested by the occasions of life: What is your *own* thought, and what is your *own* utterance? The thought may be confused, and will certainly be inadequate; but we are content to find that he *thinks;* the utterance may be halting and unformed, but we are content to find that he strives, with fair success, to utter the thought in his own language—to express *himself.* But a satisfactory pass, even in this twofold examination, is a subordinate matter, though essential; for the final aim has yet to be considered—that for which all knowledge and all faculty exist—life, living, doing. There is still, therefore, a second, and, as I have already indicated, a supreme and governing question.

"2. And that question is, What are the motive forces of all

your activity; what ideas inspire you; what ideal of life do you strive after, so that the best and highest in you may be made manifest in all your manifold relations to your fellowmen?

"The answer which the youth of eighteen, whose secondary course is completed, can give to these two questions, is the measure of his education. From this leaving-examination no one can ultimately escape, and if we teachers dwelt more than we do on this final testing of our work, we might, perhaps, be guided to the solution of many minor difficulties, and regard with careless equanimity much that now assumes unduly large proportions."

Language the Central Subject.—"Now, it is clear to me that if the 'supreme end' be that which alone gives significance and vitality to all our daily work, we must find, as our central subject of instruction, one which, while giving general discipline to the mental powers, with a view to mental power, will, at every step, help forward the growth of the ethical in our pupils. What is this subject? At this point, it may appear that theory deserts us, and idiosyncracies, prejudices, custom, take its place. I have discussed the question elsewhere, and I shall accordingly be excused for merely dogmatically asserting here that the answer which theory gives is that the central subject we are in search of is Language—language as a discipline, and language as a liberal course of reading in literature, history, and what else you please. By language, too, I mean the vernacular; but, inasmuch as we require to study a foreign tongue to give meaning to our own, I add Latin, as being at once our own tongue, and in contrast with it. Whatever else we may teach, all, it seems to me, must grow round this central and magistral subject—language, English and Latin."

The Place of Physical Science.—"Theory, as I understand it, largely confirms the practice of the past as regards subjects of instruction, though extending their significance and range. This may be said without depreciating the claims of physical science. While sensible of the many advantages conferred by school science, I doubt if it can give true mental discipline before the age of sixteen or seventeen. Prior to that age supremely good teaching may give, by means of concrete and experimental studies, a certain discipline as well as knowledge. But the true discipline begins only when science is taught as a re-investigation and verification of the scientific

results already ascertained; and I am disposed to think, from all I have yet observed, that only in the department of botany is this possible before the age which I have mentioned. All before this age is of the nature of object lessons—as such extremely valuable, and indeed necessary, but restricted in their educative effect. In any case, physical science, at best, has to do with inductions and deductions from sense alone, and accordingly it can never, by any possibility, have the educative effect of language, nor can it, even as an exercise in investigation, give that general power over all possible material that may be presented to the mind to deal with in the complexities of human life. The student of science is always exercising his intelligence on a limited part of human experience, while the student of language, in the extended sense, which is the true sense (any other sense being the invention of pedants), may be said to be always in contact with the whole. The humanities alone truly educate a human being.

"This, then, is the answer which theory, I think gives to the question, 'What shall I teach?' First of all, and always, language (the vernacular, Latin, and what else there may be time for)—but this in a large and liberal sense; secondly, a certain amount of pure mathematics, and, in subordination to both, the elements of physical science, giving prominence, for reasons intellectual and practical which I have not time to enter into now, in this department to physical and industrial geography. Such a course of instruction, well organized, would suffice to foster in our young men both moral and intellectual interests, and to secure a certain encyclopædism of faculty. The introduction of any other subjects is to be determined by predisposition and natural aptitude, or, it may be, by considerations of utility alone—whether the subject be Greek, French, German, advanced mathematics, or physical science. I do not think it matters much which of these are selected, if our curriculum has already assured the *education of the minds* of our pupils. Nor can there be any objection, if the general education of a boy has been sound, to devoting the last year of his stay at school to preparation for certain public examinations. This should certainly not be left in the hands of the professional coach."

The Place of Greek.—"I have been speaking of secondary education within its own limits, and without reference to the primary instruction on which it rests, or the higher education

of the universities, to which it leads. The great mass of our middle-class youth have, about the age of eighteen at latest, to think of the business of life, and secondary education must not be sacrificed to the demands of the few who propose to continue their studies at universities. In like manner, primary education has its own limits, and must have a certain completeness in itself, without too much regard to the secondary instruction which only a select few can ever aspire to. In the theory of education the harmonizing of the claims of each of the three stages of education in their relations to the other stages ought not to be a very difficult problem. The question which still agitates the minds of headmasters—that of 'Little-go' Greek on entering the university, has been discussed too much from the university point of view, and too little regard has been had to the real question at issue, viz., what is our scheme of secondary education to include, as within itself rounded and complete? The dropping of Greek from the previous examinations in our universities will certainly drive Greek out of a great many secondary schools. No good end can be served by affecting to ignore or to minimize this certain consequence. And it is full recognition of the effect of the proposed change on the teaching of the schools that I hold that it ought to disappear from the 'Previous' as a compulsory subject. The result will certainly be that the number learning Greek throughout the country will be lessened, but it does not follow that the quantity of Greek, as measured by quality, will be diminished. There can be no doubt that the contrary will be the result. We shall have honest Greek when we do have it, not the pretense of it. The moral effect of this will be good—no small gain. When I spoke a few minutes ago of the ethical end of all education, I did not mean to suggest that by sentiment and moralizing we should endeavor after this end. A schoolmaster will best discharge his ethical function by securing a willing and loyal obedience to the law of the school, and by demanding exactness and thoroughness in all the work done. Now, there is a laxity and superficiality in the Greek of our secondary schools (and not in the Greek alone) which is demoralizing. If we are to teach Greek, let it be Greek. A mere pass in 'Little-go' Greek is evidence neither of discipline nor of knowledge, but rather of inexact teaching and wasted years. Indeed, if we confine our attention to the amount of Greek necessary for a

'pass' in the 'Previous,' it would be a mere superstition to advocate its retention. But, even assuming that the university requirement was practically what in theory it is intended to be, the increased stringency of the university demand would go far to empty our universities. The discipline involved in such an amount of knowledge would doubtless be valuable; but should we be justified in holding that an equally valuable discipline indicative of 'ripeness' for university study could not be obtained through other instruments than Greek? I think not. For, remember, Greek is, within the narrow restrictions of any possible 'Previous' examination, a question solely of linguistic discipline. Did it include acquaintance with Greek literature, Greek forms, and Greek life, the time could not be better employed in the interests of the education of the human mind. But within the narrow restrictions we assume, this is not in any substantial sense practicable. We must look facts in the face, and not make a pretense of doing what is beyond the powers of all save here and there a singularly apt pupil under a singularly able master. If Greek were to be continued throughout every graduation course and enter into every final examination, the question would be an altogether different one, viz., Is a competent knowledge of the Greek language, literature, and history, to be the *sine qua non* of a university degree for all? Are the acquirements demanded in the admirable *literæ humaniores* school of Oxford alone to qualify for a degree? I can well imagine many men maintaining the affirmative to this question, and finding a great deal to say for themselves. But if, as a matter of fact, such a three years' university training in Greek has already been given up as a qualification for a degree, the citadel of the position has, it seems to me, been surrendered. It is too late to discuss this question: the logic of events has settled it."

The Mediæval University Knew No Greek.—"Let us, for a moment, bring the light of history to bear on the question of compulsory Greek. When we try to estimate the true value of this contemporary question by the educational records of the past, as well as by educational theory, we are prepared, on historical as well as theoretical grounds, to assist at the death of 'Little-go' Greek without a tear, and to smile at the passionate advocacy of it by those who see in its abolition the destruction of the only barrier that stands between us and the

in rush of a new tide of Gothic barbarism. For these mediæval universities, during three or four centuries, concentrated in themselves all learning, and were characterized by a brilliant activity, with no Greek and very bad Latin. The supreme questions which directly concern human life and destiny had, after a thousand years of discussion, to all seeming been finally settled by the authority of the Church. The philosophic speculation of Aristotle (but this not for a time accessible in the original tongue) then asserted itself, and dogmatism had to be reconstructed on a philosophical basis. The flash of thought produced by the contact of Greek speculation, imperfectly known, with the Christian dogmatic system, lighted up afresh the mind of Europe. Thus it was that all speculation as to the nature of mind and of things gathered round the theological schools. Theology had to make terms with Greek thought, and the effort to do so found its most brilliant exponent in the daring Abelard, and finally its consummation in the organizing mind of St. Thomas. In other parts of Europe, the old Roman law did for thought on the practical and civil side what Greek tradition accomplished on the theoretical. So, in medicine, it was undoubtedly the Greek tradition which was seized on by the active naturalistic minds of this wonderful twelfth century. But, during all this period, and indeed till about three hundred and fifty years ago, Greek did not enter into the educational system, and literature, save as represented by a few Latin classics, was practically non-existent, in spite of the literary advocacy of men like John of Salisbury. The characteristic of the Renaissance of the fifteenth century was undoubtedly the revival of Greek, but it was Greek as literature, aided by the new birth of poetry in Italy, South France, and England. In our own country, it is worthy of notice, our greatest literature owed little to Greece, except through a Latin and Italian medium and English translations, though doubtless largely influenced by the growing interest in Greek."